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Recommends More Intensive Reforestation

Director Zon of Lake States Experiment Station Advocates Planting 57,000,000 Acres of Cut-Over Land To Augment Pulp Wood Supply — Senator Kresky Opposes Wolf Reservoir Project — Other Late News.

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., June 26, 1939—More intensive reforestation principally to augment the pulp wood supply of paper mills was proposed by Raphael Zon of St. Paul, Minn., director of the Lake States Forest Experiment Station, at the meeting in Milwaukee last week of the American Association for the Advancement of Science.

He pointed out that there are 57,000,000 acres of cutover land comprising an area of 90,000 square miles in northern Wisconsin, Michigan and Minnesota. His suggestion is that the same plan be followed as in European countries, where in the same latitude and climate, with only one-half to one-third the area, a population of two to six millions is supported solely by reforestation. It keeps one man busy per 100 acres.

Assuming that in the cutover lands one man was assigned for reforestation of each 1,000 acres, 45,000 men could be put to work on the assumption that reforestation is desirable on 45,000 acres. Large portions of the land are also adaptable to agriculture, Mr. Zon said, and farming could be combined with reforestation.

"It is about time for us to stop talking about the cutover region as a region of depleted resources, and start developing public policies of better land settlement," he said. "We should bring about a better handling of our timber resources, and discourage the use for the benefit of outside interests with little or no substantial development for the people of the region itself."

Senator Kresky Opposes Reservoir Plan

Opposition to the plan of the Wolf River Reservoir Company to build a storage reservoir on the upper Wolf River at Lily, Wis. in order to provide more adequate flow for the paper mills of the Fox River Valley has been voiced by Senator Michael F. Kresky of Green Bay, Wis. He objects to passage of a bill now before the Wisconsin Legislature granting authority for the reservoir.

Senator Kresky has been asked by representatives of the Menominee Indian tribe, through whose reservation the Wolf River flows, to consider a PWA grant for a power dam on the Wolf under the federal power act. He believes it more valuable and practical than the reservoir plan. If such a dam is built, the reservoir further up the river would not be feasible, he says. The senator also believes the Wolf River Reservoir Company will later want to build a power plant of its own.

Thilmany Setting Safety Record

Thilmany Pulp and Paper Company, Kaukauna, Wis., already setting a new safety record at its upper mill, has now completed 200 days without a lost time accident, according to L. C. Smith, personnel director. It exceeds the previous mark by 70 days. Throughout this period the mill averaged 513 employees.

In what is called the lower mill, the record as a whole has been only 39 days since the last lost time accident. However, several departments have made outstanding records. The digester department, with an average of 26 employees, has run 1,591 consecutive days; the recovery department, with an average of 34 workers, 1,547 days, and the bag mill, averaging 92 workers, 385 days, without an accident.

No lost time accident for more than six and a half years since January 1, 1933 is the record of six departments of the upper mill. They are the printing, paper storage, steam power, tin shop, box factory and garage divisions. The sulphate mill maintenance department has also worked during the same period without a mishap.

Safety Booths Featured at Kimberly-Clark Mills

Safety booths which featured the recent safety rally of employees of the Neenah and Appleton, Wis. mills of the Kimberly-Clark Corporation were placed on public exhibition Sunday, June 18, at Lakeview mill park pavilion. They were so outstanding they were kept intact and were seen by residents from all over the Fox River Valley. The Lakeview mill band, directed by Lester Mais, presented an hour's concert during the exhibit.

Employees of the corporation's mill at Kimberly, Wis. have organized the "Kimberly Kollege of Safety Knowledge," and are holding question bee programs at the mill clubhouse dealing with safety. The work-

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Midwest Paper Trade Trend Continues Up

Net Wholesale Sales In May Up 12.3 Per Cent Above Same Month Last Year While Collections Increased 8.5 Per Cent — Current Market Situation Unchanged — New State Legislation May Stimulate Paper Sales.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., June 26, 1939—The Chicago paper market continues to present an almost colorless picture for the week. Most markets have indicated no particular change and the only noticeable differentiations are reported in the kraft markets where a slightly less stable condition is allegedly in evidence. Sulphite bonds are in a stronger position with demand running somewhat better. The improvement in these lines is said to overshadow any developments in the bond and cover lines. Groundwoods are little changed although demand is somewhat stronger. Newsprints report no particular changes. The board market is fair and feeling the improving effects of a campaign to develop wider uses for these grades. Waste papers are continued soft.

Wholesale Trade Trend Upward

May trends in the wholesale paper trade in the Seventh district were generally favorable. Net sales for May as compared to May, 1938, showed net sales increasing 12.3 per cent with stocks increasing 3.4 per cent. Accounts outstanding declined 0.6 per cent while collections increased 8.5 per cent. Total May sales of all groups exceeded those of the preceding month by 12 per cent and were 11 per cent better than in May of a year ago.

From an industrial employment standpoint the 751 paper and printing firms in the seventh federal district comprising the States of Wisconsin, Michigan, Illinois, Indiana and Iowa showed about the same status as on April 15. For the week of May 15 the 75,441 wage earners earned $2,168,000, the number of wage earners remaining the same as for the week of April 15 with earnings declining 1 per cent. The paper industry gave a good account of itself in comparison with other industries where the general total average was a decline of 2.2 per cent in wage earners and of 3.3 per cent in earnings.

Clark Change Rumored

While no official announcement has been made there are plenty of rumors around Chicago that Robert C. Clark, executive of Nationwide Papers, Inc., is to soon become the assistant to the president of the Eastern Corporation, formerly the Eastern Manufacturing Company. Mr. Clark is widely known in Chicago paper circles through his connections with Midland, Zellerbach and other companies and through his work with Nationwide which was created a year or so ago to promote a special production job for jobber interests.

Gilbert House Organ Circulation Expands

The Gilbert Paper Company, with Chicago outlets through Berkshire Papers, Bradner Smith & Company, Dwight Brothers Paper Company, Empire Paper Company and Moser Paper Company, is expanding the circulation of its interesting house organ "The Gilcrafter." The current issue utilizes Gilbert Dispatch Index Bristol for the cover and Gilpako Bond (Opaque) substance 20, for the body stock. Contents include an interesting continuation of the series on "Little Lessons in Paper Making," considerable attention to the qualities of "Valiant Bond" and a most effective analysis of "Letterheads of the Month" wherein actual letterheads are printed and completely described as to color, quality, paper source and printing.

Midwest SAPI Play Golf

The midwest division of the Salesmen's Association of the Paper Industry held its second golf outing of the season on Friday, June 23, at the Park Ridge Country Club. While full reports of the meeting will not be available until next week, it was reported by Chairman George Crafts that over 50 had sent in their reservations for the lunch, golf and dinner.

New Legislation May Stimulate Paper Sales

The Illinois Legislature closes next Friday, June 30, with little or no chance of passage of legislation harmful to Illinois industry—and thus directly to paper and allied trades. Rather is there a constructive series of amendments to the Unemployment Insurance Act which should be somewhat helpful and a measure setting up an Illinois Development Council which should materially stimulate the advertising of the State's resources. This latter measure which probably will be passed in the House next week, appropriates $250,000 to advertise the State, attract new industries, preserve existing industries and otherwise further develop all resources. Paper executives feel that it will serve to create more interest in the use of paper and that the general increase in State activity will also prove beneficial.

Trucking bills, a worry to many paper interests, have little or no chance of getting through. State wage-hour legislation is off the calendar as is a proposed Baby Wagner Act, an anti-spy measure, an anti-injunction act and other proposals which, at the first of the session, looked highly menacing.

Lobdell Car Wheel Co. Buys Nazel Works

Howard L. Seaman, secretary-treasurer of the Lobdell Car Wheel Company, Wilmington, Del., has announced the purchase of the business of the Nazel Engineering and Machine Works of Philadelphia, Pa.

The Lobdell Company, established in 1836, are well known in the railroad and paper-making machinery fields for the high standard of quality of their products. They are well qualified to maintain the enviable reputation of the Nazel Air Hammer and the Dill Slotter and to continue the business established by John Nazel in 1900. They announce that the supervision of their Nazel Hammer and Dill Slotter Division will be under the capable direction of Howard W. Wimer who has been associated with the Nazel business for thirty-five years.

Lake Sulphite Pulp Co. Pressed for Funds

G. S. Currie, Receiver and Manager of Lake Sulphite Pulp Co., Notifies Creditors of Lack of Funds To Pay Maintenance Costs—Canadian Wallpaper To Pay Dividend—Cutting-Up Plant of International Starts Work.

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., June 26, 1939—G. S. Currie, receiver and manager of the Lake Sulphite Pulp Company, Limited, has notified creditors that unless he is placed in sufficient funds by creditors or otherwise on and after June 26, fire insurance at the plant at Red Rock, Ont., will be cancelled and watchmen and maintenance services in and around the property will be largely discontinued. It will still be possible to maintain a skeleton watchman's staff at Red Rock but it appears that this service may have to be discontinued in a short time. Mr. Currie is taking this action under an order of the Supreme Court of Ontario and explains that it was necessary to apply for such an order because of lack of funds.

Barking Plant Begins Season's Operations

The cutting up mill and barking plant of the Canadian International Paper Company, at Hawkesbury, Ont., began the season's operations last week. With three shifts each of eight hours running, some two hundred men will get employment for the summer. According to the authorities, the opening of the two plants will mean about one thousand persons taken off the relief rolls within the next two weeks.

Canadian Wallpaper To Pay Dividend

Canadian Wallpaper Manufacturers, Limited, Toronto, in common with others has felt effects of somewhat general slowing up in business during past year but stocks in hands of company's distributors are generally low so that as soon as normal demand is restored it will feel the benefit, Arnold Ashton, president, told shareholders at annual meting. The company is continuing its policy of placing before the trade a wide range of products. No further abnormal capital expenditure was anticipated as the company's three plants are regarded as being completely modernized. The meeting approved the dividend of 50 cents payable July 11, record date July 4, as recommended in the annual report.

Cutting To Produce Drinking Straws

Cutting, Limited, 364-370 Richmond St., West, Toronto, manufacturers of paper rolls for automatic machines, are completing arrangements to produce a line of drinking straws for refreshment counters as developed by New York interests. Special machinery from this source is being installed now in the Toronto plant and some allied lines will be added later. National distribution of the product is to be handled by Kilgours, Limited, Toronto, paper dealers.

F. A. Sabatton Heads Dryden Paper Co.

F. A. Sabatton has been elected president of Dryden Paper Company, Limited, Dryden, Ont., filling the position held by the late J. H. A. Acer. He was formerly vice-president. John S. Wilson, general manager, was elected vice-president, succeeding Mr. Sabatton.

Indianapolis Demand Expands

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., June 26, 1939—A gradual expansion in the paper business was reported here this week, the expansion being greater in some items than in others, but on the whole the picture is a trifle brighter than it has been for some time. While demand for fine paper has shown some expansion, it still is spotty. There are many inquiries concerning books, ledgers and covers and it is believed business will materialize from these inquiries. Prices are being held firm.

Demand for wrapping paper and bags has shown a brisk increase. Much of this, jobbers say, is due to an increasing volume of retail business throughout the state. The May retail index was considerably higher than it was the month before, which seems to authenticate the jobbers' views as to the cause.

Building paper and roofing demand continues heavy. There is expected to be a lull during the coming month but it may not materialize in the degree it usually does. At the present time jobbers continue to receive orders, due perhaps to the fact that retailers have been unable to build up and stocks to speak of.

Container manufacturers also report some increase. A big demand has been seen from the ice cream trade, better than the same time a year ago. Waxed containers and cups are particularly good right now. The box men also report more business. Automobile accessory manufacturers are back in the market. There is a good demand from the hardware trade. Beer cases also are in demand. The entire price level is being well maintained.

Summer specialties have sold nicely the last week as dealers prepared for the Fourth of July holiday. Indiana generally will quit work the last of this month and not go back until the fifth. Retailers are expecting to reap a harvest in summer specialties by the end of this week. Jobbers expect them back in the market the week after. Here, too, prices are firm.

Little change is seen in the waste paper market. There is some mill demand, but it is none too active.

To Build at Kalamazoo

The American Cyanamid & Chemical Corporation, 30 Rockefeller Plaza, New York, N. Y., has approved plans for a new plant at Kalamazoo, Mich., comprising several units, to be equipped primarily for the production of chemicals used in the paper industry, as well as certain new chemical specialties recently perfected by the company. It is estimated to cost about $300,000, with equipment and will replace a smaller plant operated in that city for the past 15 years or so. Large increased capacity will be carried out in new plant, plant, for which work is scheduled to be placed under way at early date. Company is a subsidiary of the American Cyanamid Company, first noted address. L. R. Verdon is manager for company at Kalamazoo.

Newsprint Exports In May Advanced Sharply

Government Reports Show Volume of Canada's Exports of Newsprint Above Previous Month and Corresponding Month Last Year — Pulp Exports Valued At $2,459,214—Change In Finland's Newsprint Market

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 26, 1939—Government returns just issued show that both in volume and value Canada's exports of newsprint in May recorded a sharp advance over those of the previous month and of the corresponding month of last year. The total amounted to 4,887,992 cwts., valued at $10,677,981, as compared with 3,247,091 cwt., valued at $6,955,061 in April, and 4,181,388 cwts., valued at $9,135,364 in May, 1938. The figures for May were only exceeded twice in the year 1938, namely in October, when the newsprint exports were valued at $10,834,212, and in November, when they were valued at $10,838,543. Of the total May exports 4,059,422 cwts., valued at $8,923,337 went to the United States. The remainder went to 25 different countries, the principal buyers being the United Kingdom, which took 335,439 cwts., valued at $565,511; Australia, 320,372 cwts., valued at $818,515; British South Africa, 46,158 cwts., valued at $101,444; Ireland (Eire), 33,558 cwts., valued at $51,703; Argentina, 31,837 cwts., valued at $68,941; and Cuba, 16,800 cwts., valued at $34,055.

Wood Pulp Exports Valued at $2,459,214

The total exports of wood pulp amounted to 1,106,520 cwts., valued at $2,459,214, as compared with 842,605 cwts., valued at $2,028,987 in April and 965,925 cwts., valued at $2,469,838 in May, 1938.

For the first five months of 1939 the total exports of newsprint amounted to 19,409,267 cwts., valued at $41,844,875, as against 18,175,367 cwts., valued at $38,581,924 for the first five months of 1938; while the total exports of wood pulp amounted to 4,685,509 cwts., valued at $11,011,475, as compared with 4,261,597 cwts., valued at $11,722,449 in the similar period of 1938.

Change in Newsprint Market in Finland

The current issue of the Monthly Bulletin of the Bank of Finland, just received here, has this to say in respect to the pulp and paper industry in that country: "The market for newsprint recently experienced a distinct change. The demand was comparatively lively, especially for early delivery, and it looks as though importers' stocks had dwindled to such an extent as to necessitate fresh purchases. For this reason prices are firm, though still low. In regard to some qualities of wrapping paper, too, the market displays a livelier tendency. In the market for chemical pulp there has, however, been no pronounced change. Deliveries have been expedited, it is true, owing to the fear of war and some importers have seized the opportunity of making contracts at the current low level of prices."

Coal Strike May Affect Paper Mills

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., June 19, 1939—Paper mills and other concerns requiring soft coal for operations have supplies on hand for a few weeks at least and there is no immediate danger of a shutdown in this section because of the bituminous coal strike. Unless the strike is terminated soon, however, several concerns will encounter difficulties. The Union Bag and Paper Company, probably the largest user of soft coal in this section, has a small supply on hand, according to an official. No coal has been received there since the strike started several weeks ago and the storage pile at the Fenimore branch is rapidly diminishing. The company uses a semi-bituminous fuel, produced by a section of the coal industry first hit by the strike. The boiler house at the Allen mill at Hudson Falls requires 537 tons of coal a month while that at the Fenimore branch needs 1,730 tons. About 1,200 persons are now employed at both mills. An official of the Sandy Hill Iron and Brass Works, Hudson Falls, declared that his company had a supply to last about the middle of June. The firm uses from 150 to 200 tons monthly. The firm of Finch, Pruyn & Co., Inc., uses anthracite coal exclusively in the operation of its paper mill and is therefore in no danger from the strike. The Imperial Paper and Color Corp. also burns anthracite exclusively and has a supply sufficient to last several months. An official of the Imperial branch at Plattsburg stated that there was only enough on hand for a few weeks. Another Plattsburg concern, the Berst-Forster-Dixfield Company, said its supply was small and there was a possibility of a shutdown if no coal was available. About 1,000 workers are employed at both plants. The Fort Edward branch of the International Paper Company is not affected by the strike as it uses anthracite.

Storrs & Bement Have Outing

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 26, 1939—With a party of about 80, the outing of Storrs & Bement Company, held Saturday, June 10, at Green Acres Country Club, Saxonville, Mass., was a complete success.

The program included an exciting baseball game in which the office beat the salesmen by a score of 21 to 17. Winners in the other sports included: Bowling, Charles Clark for the men and Ingrid Soderblom for the women; ping pong tournament, Mrs. Sandy Clyde and Roger Nowell. Additional events included golf, horse shoes and deck tennis. Bountiful refreshments were served.

It was very gratifying and unusual that so many were able to be present, including the entire personnel from New Haven and Hartford, Conn., and Providence, R. I., and representatives from Springfield and Worcester, Mass. Among those attending were officers of the company, William N. Stetson, Jr., president; John H. Brewer, vice-president and general manager; E. L. Cummings, vice-president and manager of the Providence office; Charlie Charnella, manager of the Springfield office; Michael Alogna, manager, Hartford; and Jack Stevens, manager, New Haven.

Philadelphia Paper Men Enjoy Golf Outing

One Hundred and Eighteen Members and Guests of Philadelphia Paper and Cordage Association Attend Annual Golf Outing At Manufacturers' Country Club — Schuylkill and Satterthwaite Companies Consolidated.

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., June 26, 1939—On Wednesday last the Philadelphia Paper and Cordage Association in motor caravan gathered at the Manufacturers' Country Club, Oreland, Pa., for its annual golfing and other sports. This is always a big event in the annals of the Association, and this year was no exception both in the matter of attendance and good comraderie. The key note of the outing was the very splendid talk by president Jack Howarth, when, after a strenuous day on the greensward, the one hundred and eighteen members and their guests assembled in the clubhouse for dinner. Notably present were Doris E. Lewis, executive secretary of the Philadelphia Paper Trade Association, Hugo H. Hanson, president, W. C. Hamilton & Sons, Miquon, Pa., Meryl Foraker and Russell Shaw of Lee Tire Rubber Company, Conshohocken, Lee Johnson, Gummed Products, Troy, N. Y., Carroll T. Gardner, representative of Henley Wax Paper Manufacturing Company, The Bronx, N. Y., Groton Paper Company, Groton, N. H., and Little Falls Paper Company, Newburgh, N. Y. Besides golf there were quoits and tennis, and all the participants were in first class midsummer form.

Low gross: Schuylkill Paper Company Cup and a No. 4 Wood was won by M. G. Foraker with a score of 80. Low net resulted in a tie between E. C. Buckley and David Wickerham, with a score of 70. Low net prize is a niblick and will be awarded to the winner of the match, which is scheduled to be played off some day this week. First prize—Kicker's Handicap, a Chipper Club was won by Charles Wilder; second prize—Kicker's handicap, golf balls was won by Butler Smythe of J. L. N. Smythe Company; third prize—Kicker's Handicap, golf balls won by Howard Satterthwaite; first prize—Putting Contest, golf balls won by Norman Patterson. Two prizes were awarded for the victors in quoits; the first prize won by Carroll Gardner, silver salad fork and spoon, and the second prize a silver syrup pitcher went to George K. Hooper, president of Hooper Paper and Twine Company, and a former president of the Paper and Cordage Association. Mr. Gifford of H. M. Giffiord Manufacturing Company was awarded first prize in tennis, a set of tennis balls. E. K. Lay, chairman of the Entertainment Committee and a former president of the Association, awarded the prizes.

Schuylkill and Satterthwaite Consolidate

Announcement has recently been made of the consolidation of Schuylkill Paper Company and Satterthwaite-Cobaugh Company, effective July 1. The headquarters of the new organization will in all probability be at the Schuylkill Paper Company's present address, 256-60 North Third street. Howard Satterthwaite and Clyde Cobaugh, both well and favorably known to the paper industry, will direct their attention to the executive and sales activities.

Miss Garrett To Study in Europe

Helen Garrett, who is well known to the trade here because of her activities as assistant to her father, Sylvester Garrett who was head of a paper house bearing his name, but more recently connected with Garrett-Buchanan Company, sailed for France on June 21st. Miss Garrett was awarded two French scholarships for excellence in studies at Swarthmore College, from which she graduated in 1932. One of the scholarships entitled her to teach the English language at the Girls' Normal School at Armentieres and the other to continue post graduate work in the French language at the University of Lille, ten miles away, in philosophy and history. Miss Garrett, while a student at Swarthmore, spent her vacations in business association with her father. The Garrett family has been linked with the paper making and distribution industry in Philadelphia for over 100 years. Miss Garrett is working for a degree of Doctor of Philosophy at the University of Pennsylvania, and will do some reading in the Bibliotheque Nationale in Paris; she will travel in Brittany, northeastern France and will also visit in the district of Vosges.

Paper Stock Market Quiet

Virtual stagnation continues in the paper stock market for all the cheaper grades, but there is real satisfaction among the packers that there has been little or no recession of quotations in the better grades. Sales in the lower grades are often made below market quotations, supposedly by reason of the fact of having to unload an overstocked warehouse.

English Guests at SAPI Luncheon

At the special luncheon meeting of the Eastern Division of the Salesmen's Association of the Paper Industry, held at the Hotel Lexington, New York on June 26, several members of the newsprint industry in England were present.

R. S. Kellogg, secretary of the Newsprint Service Bureau, introduced the guest speakers who were William C. Powers, sales manager, William Dixon and Cuthbert Dixon, of Peter Dixon Sons, Limited, newsprint manufacturers of Grimsby, England. "Billy" Powers, before locating in England twenty years ago was associated with the International Paper Company and later was connected with the Great Northern Company.

G. L. Clark Leaves Standard Products

Gilbert L. Clark, for the past seven years vice-president of Standard Products Corporation and its subsidiaries the Ancram Paper Mills and Braunstein Freres, Inc., has resigned. Mr. Clark was previously fourteen years with The Smith Paper Company, of Lee, Mass., where he was vice-president and in charge of manufacturing.

Financial News of Pulp and Paper Industry

U. S. District Court Approves Minimum Price of $100,000 For Walloomsac Plant—Abitibi Reports Earnings—Marathon Sells Bonds—Increased Profit For Schumacher Wall Board Corp—Carey Company Shows Loss.

New York Stock Exchange

High, Low and Last for the Week Ending June 28, 1939

	High	Low	Last
Armstrong Cork Co.	39½	35¾	35¾
Celotex Corp.	12⅜	11¼	11¼
Celotex Corp., pf.	66	66	66
Certain-Teed Products Corp.	8	7⅛	7⅛
Certain-Teed Products Corp., pf.	29	28	28
Champion Paper & Fibre Co.	18½	18½	18½
Congoleum-Nairn Co.	23½	23	23
Container Corp. of America	10¾	9⅝	9⅝
Continental-Diamond Fibre Co.	6⅝	6	6
Crown-Zellerbach Co.	10	9⅝	9⅝
Crown-Zellerbach Co., pf.	80	78	78
Flintkote Co.	20⅞	18¾	18¾
Robert Gair	2⅜	2⅜	2⅜
Robert Gair, pf.	8⅜	8	8⅛
International Paper & Power	8¼	7¾	7¾
International Paper & Power, pf.	32	29	29
Johns-Manville Corp.	75½	70	70
Johns-Manville Corp., pf.	130	130	130
Kimberly Clark Corp.	26	25½	26
MacAndrews & Forbes	31½	31½	31½
Masonite Corp.	39¾	39	39
Mead Corp.	7⅝	7⅜	7⅜
Mead Corp., pf.	58	58	58
Paraffine Companies, Inc., pf.	102	102	102
Rubberoid Co.	21½	21¼	21¼
Scott Paper Co.	51⅞	51½	51½
Sutherland Paper Co.	28	27⅝	27⅝
Union Bag & Paper Corp.	8⅝	7¾	7⅞
United Paperboard Co.	4¼	4¼	4¼
U. S. Gypsum Co.	92½	86½	86½

New York Curb Exchange

High, Low and Last for the Week Ending June 28, 1939

	High	Low	Last
American Box Board Co.	6¼	6¼	6¼
Brown Co., pf.	13	13	13
Great Northern Paper	36½	36½	36½
St. Regis Paper Co.	2⅛	2	2
St. Regis Paper Co., pf.	38½	38½	38½
Taggart Corp.	3	3	3

Approve Price for Walloomsac Plant

[FROM OUR REGULAR CORRESPONDENT]

TROY, N. Y., June 26, 1939—A minimum price of $100,000 for sale of the Walloomsac plant of the Stevens & Thompson Paper Company, has been approved by the United States District Court. The plant now is running on full time and, if sold will be continued as a paper plant.

The Stevens & Thompson concern has at present a contract with a would-be purchaser of the plant. As a result of the court hearing which approved the minimum sale price, operations at the plant will be continued for 90 days or pending decision of the option holder.

In the meantime a survey of operations at the plant and market conditions will be made by the person who has the option to furnish figures to show whether the plant should be bought at the present time.

The holder of the option plans to spend several thousand dollars on the survey. An engineer will go into the plant and make a thorough study from which he will decide how the plant can best be operated and what improvements can be profitably made.

In case the holder of the option does not buy the plant, there figures will become the property of the Stevens & Thompson concern.

If the plant is sold the proceeds will go toward retirement of the first mortgage.

The firm of Pattison, Roberts & Sampson, Troy attorneys, represents the concern.

Abitibi Earns $148,750

TORONTO, Ont., June 26, 1939—Earnings of Abitibi Power and Paper Company for May, prior to charges for depreciation of $148,750, and for bond interest (including interest on overdue and unpaid interest) of $271,501, amounted to $237,830. Earnings, prior to charges for depreciation and bond interest, amounted in April to $175,446, and in May, 1938, to $285,264. Shipments of newsprint in May amounted to 27,201 tons, compared with 24,293 in April and 25,412 in May, 1938. Indications are that shipments of newsprint in June will be about 23,000 tons, compared with 27,493 in June, 1938. Shipments of sulphite pulp in May amounted to 3,435 tons, compared with 3,261 in April, and 3,000 in May, 1938. Indications are that shipments of sulphite pulp in June will be about 2,800 tons, compared with 2,142 in June 1938.

Butler Paper Co. Opens Pueblo Branch

PUEBLO, Colo., June 26, 1939—Harold N. Spath, well-known Puebloan, is now managing the Pueblo branch of the Butler Paper company, it was announced yesterday. For the past seven years Mr. Spath was manager of the Sumners Paper company here which has discontinued its Pueblo branch. The new Butler company is now open for business at 236 West First street, the location formerly occupied by the Sumner's firm.

The Butler company is a Colorado corporation, a division of the Butler Paper company of Chicago. It will handle a complete line of fine paper and paper products and linoleum, serving the entire Southern Colorado area from the Pueblo branch.

Marathon to Sell Bonds

The Marathon Paper Company has made arrangements to sell to the Equitable Life Assurance Society $3,500,000 of 4½ per cent fourteen-year bonds. The proceeds will be used to retire $1,750,000 of 5½s and about $1,700,000 of long-term bank loans. The company also arranged for an additional $1,000,000 six-year 4 per cent bank loan to take care of expanding capacity.

Schumacher Nets $136,952

The Schumacher Wall Board Corporation for the year to April 30 reports a net income of $136,952, equal after preferred dividends, to $1.21 each on 66,000 common shares, compared with $33,500 or $1.18 each on 28,510 preferred shares in preceding year.

Carey Net Loss $95,355

The Carey Manufacturing Company, for 1938, reports a net loss of $95,355, compared with net income of $427,492, equal after preferred dividend requirements, to 82 cents each on 395,131 common shares in 1937.

Obituary

Julian C. Smith

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., June 24, 1939—The death occurred here today at the comparatively early age of 61, of Julian C. Smith, president of the Shawinigan Water and Power Company, who for many years had been closely associated with the development of the pulp and paper industry in the province of Quebec and in particular in the St. Maurice Valley where the largest customers of the company of which he was president were the pulp and paper companies. Mr. Smith was a past president of the Engineering Institute of Canada and was a member of the British Institute of Electrical Engineers, the American Institute of Electrical Engineers and the American Society of Civil Engineers. He was married in 1909 to Bertha Louise Alexander of New York. They had two sons and two daughters.

A native of Elmira, N. Y., he was educated at the Central High School in Buffalo, at Cornell University and at Queens University in Kingston, Ont., and McGill University, Montreal. He began his career as a draftsman with Wallace C. Johnson at Niagara Falls, N. Y. Two years later he came to Canada as assistant engineer for the Shawinigan Water and Power Company. His rise was rapid. In 1903 he was appointed Superintendent of the Company in Montreal, becoming General Superintendent three years later. In 1909, he was made General Superintendent and Chief Engineer. His election as president and managing director came in 1933. During his connection with the company he saw it rise from an obscure position to one of the largest hydro-electric enterprises in the world, with large subsidiary enterprises of the company for the use of the power.

John T. Robinson

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., June 26, 1939—John T. Robinson, 63, president of the John T. Robinson Company, manufacturers of paper box machinery, Hyde Park, died June 20 of heart disease. He resided at 81 Child street, Hyde Park.

Mr. Robinson was graduated from the Massachusetts Institute of Technology in the Class of 1898 and subsequently entered business with his father, John T. Robinson, Sr., founder of the company. Later he engaged in the manufacture of the Pope-Robinson automobile in Hyde Park.

At the time of his death he was a member of the National Paper Box Manufacturers Association and the Canadian Paper Box Manufacturers Association.

Surviving are his widow, a daughter, Mrs. John Upham, and two grandchildren.

Adolph W. Waern

Adolf W. Waern was born in Billingsfors, Sweden, on the 8th of December, 1873. His father was the mill owner, William W. Waern, of the same place and his mother, Ebba Malmborg. He was married in 1891 to Lilly Augusta Meurling.

After graduation from Chalmers Technical Institute in Gothenburg, he studied for some time in Germany and was later employed as superintendent of the pulp mill at his home in Billingsfors until 1901, when he went to the United States and became associated with the Bethlehem Steel Company, where he remained until 1909.

From 1909 until 1924 he was connected with the engineering firm of J. H. Wallace & Company of New York. During the time that he was connected with Wallace & Company, the Southern Paper Company plant at Moss Point, Mississippi, was built and put into operation. He was one of the pioneers in the sulphate industry of the South. During the war period he designed for the United States Government the cotton purification plant at Nitro, West Virginia.

From 1924 until 1929 he was general superintendent of the Ontonagon Fiber Company of Ontonagon, Michigan. From 1929 until his death he did consulting work for the Champion Fiber Company and others. He was the inventor of the Waern recovery furnace. At his death he was a member of the A.S.M.E., TAPPI, and Superintendents' Association. He was buried in Evergreen Cemetery in Brooklyn on Monday, June 12th.

James J. Owens

[FROM OUR REGULAR CORRESPONDENT]

HAVERVILLE, Mass., June 26, 1939—James J. Owens, 59, of 14 Quimby street, for many years associated with the paper box manufacturing industry, succeeding his father, a pioneer in the business, died June 23 at his residence, after an illness of a year.

He was born in this city, the son of John and Mary (Pettingell) Owens. He was graduated from St. James High School and Bryant and Stratton Business College, Boston. Mr. Owens was engaged in the shoe box making business under the name of John Owens & Company, of which he was the head until last year, when he was forced to retire on account of ill health.

He was a past grand knight of Haverhill Council, K. of C., a member of Fr. Rasle Assembly, Fourth Degree, K. of C., Fr. Matthews Total Abstinence Society, the Pentucket Club, Haverhill Lodge of Elks and the Haverhill Country Club.

He is survived by his widow and a son, James J. Owens, Jr.; two brothers, John F. Owens, this city, and William H. Owens, Garden City, L. I., and a sister, Miss Helen C. Owens, this city.

J. B. Adams

J. B. Adams, 72, chairman of the Longview-Saginaw Line Works, Inc., Birmingham, Ala., died recently after an illness of several years.

Mr. Adams was well known in the pulp and paper industry and had served the company for half a century, beginning his association with the Longview-Saginaw company soon after it had been founded by his father.

Paper and Twine Club Has Outing

LAKE WAWASEE, Ind., June 26, 1939—More than 100 manufacturers and merchants of paper products and twines from mid-western states last week held the fourth annual convention of the Paper and Twine Club at the Spink-Wawasee Hotel here. Frank Vaughn, Green Bay, Wis., president, and John L. Richey, Cincinnati, secretary-treasurer, presided over the sessions, Ed Magel of the Crescent Paper Company, Indianapolis, vice president, also attended. Outstanding among business matters discussed was a training school for salesmen sponsored by the club.

New Literature

Bulletin No. 533, issued by the Bristol Company, Waterbury, Conn., describes the new thermal converter known as the Thermoverter, used with potentiometers and millivoltmeters for AC electrical power measurement and totalization.

A new Bristol Bulletin No. 356, gives full information of Bristol's pH instruments, with which equipment the company states hydrogen-ion concentration may be placed under the same close control as of other process variables.

Wacor water hammer arresters are described in a bulletin issued by the Water Hammer Arrestor Corporation, Milwaukee, Wis. Six sizes are available for eliminating destructive water hammer pressure in feed lines to boilers and in other applications in pipes up to 10 inches diameter.

Booklet, Technical Data 71-000, issued by the Westinghouse Electric and Manufacturing Company, East Pittsburgh, Pa., describes the characteristics and advantages of heat-treated hardened gears. The Westinghouse-Nutall method of treatment, control and quenching, comparison of the properties of different materials, definition of heat treatment and case hardening, is discussed and illustrated by tables and charts. Copies may be obtained from Department 7-N.20.

Bulletin No. 57, issued by the Morse Chain Company, Ithaca, N. Y., contains engineering data, installation and operating information for the entire line of Morse flexible couplings, silent chain couplings, roller couplings, Morflex couplings and universal drive shafts, and Morflex radial couplings and universal drive shafts.

Wire and filter cloth is the title of a handbook issued by the Multi-Metal Wire Cloth Company, 1350 Garrison avenue, Bronx Borough, New York. It includes the listing of representative wire fabrics, fabrication and technical data on screening and filtration, with flow rates and an index of permeability.

Bulletin No. 16, just issued by the Towmotor Company, 1220 East 152nd street, Cleveland, Ohio, describes gasoline-powered industrial tractors and lift trucks.

Bulletin No. 500, issued by B. Offen & Company, 608 South Dearborn street, Chicago, Ill., describes the company's automatic air controlled air conditioner-humidifier for paper storage, with a typical installation which is compact and can be moved intact.

Catalogue B-66, issued by the Mixing Equipment Company, Inc., 1088 Garson avenue, Rochester, N. Y., describes "Lightnin" side entering mixers as used in chemical and processing industries. Methods of installation, construction details and specifications of various models are given.

A new catalogue of Scofield special machinery for paper mills describes the Scofield felt conditioner, wire cleaner and suction pipe, and may be obtained from the Gilbert J. Scofield Company, Watervliet, N. Y.

A new catalogue issued by the Ashcroft American Gauge Division, Manning, Maxwell & Moore, Inc., Bridgeport, Conn., lists Duragauges, chemical gauges, and the complete Ashcroft line for all industries and applications.

A bulletin just issued by Coyne Vibration Control, Inc., 250 West 49th street, New York, describes the advantages of effective vibration insulation, and the several types of Co-Vib-Co insulators for application to machinery and for depressed and floating mill floors.

In a new catalogue, "Toncan iron pipe for tough service," issued by the Republic Steel Corporation, Cleveland, O., Toncon copper molybdenum iron pipe, rust and corrosion resistance, threading procedure, welding, sizes and weights, are described. Typical installations are given of applications in paper mills for hot alum lines, sulphur cooling units, boiler tubes and maintenance piping, with service records.

The coming halt in population growth, is No. 31 in a series of editorials in booklet form written by Allen W. Rucker and N. W. Pickering and published by the Farrel-Birmingham Company, 25 Main street, Ansonia, Conn. The booklet is a discussion of the policy of the Federal Government during the last six years in enacting legislation which is held to restrict production, discourage enterprise and dissipate capital and to be in part responsible for the decrease in the national birth rate.

Worthington Diesel engines, of the vertical four-cycle type, are described in Bulletin S-500-B5E, issued by the Worthington Pump & Machinery Corporation, Harrison, N. J. The manufacturer states these engines are suitable for wide application in power service, such as generating plants, and for many other industrial uses.

Bulletin L-611-B8, describes the Worthington feather valve compressors, single cylinder, single stage, motor and steam driven. Standard sizes, with piston displacements from 55 cubic feet per minute to 1987 per minute are furnished for air and gas compression.

Bulletin W-321-M3A, describes the Worthington Jetflo deep well pump, consisting of a combination of a Worthington centrifugal pump of rugged construction, with a jet in the well to lift the water to the pump. Simple construction, low initial and installation cost and negligible maintenance expense are some of its merits.

Ross paper machine hoods are described in Bulletin No. 17 issued by the J. O. Ross Engineering Corporation, 350 Madison avenue, New York. In addition to steam economy the proper hooding is stated to permit the maintenance of cleaner and lighter machine rooms and promotes more rapid and economical drying. Ross hoods, of which 200 are in use in mills, are fireproof, acid resisting and uneffected by heat and moisture.

Falk controlled torque steelflex couplings are described in Bulletin 4630, just issued by the Falk Corporation, Milwaukee, Wis. This new product is said to afford protection against peak loads from 500 per cent to 1000 per cent of the normal torques which damage shafts and housings.

Bulletin No. 278, on maintaining Diesel engine dependability, issued by the Bacharach Industrial Instrument Company, 7000 Bennett street, Pittsburgh, Pa., rescribes the company's Premax indicator, for determining the compression and firing pressures of Diesel engines.

Turbine with two lives, by W. D. Dunbar, chief engineer of the Commonwealth Ice & Storage Company, Boston, Mass., is the title of an article describing the flexibility of the steam turbine and how the new unit operates from present boilers. Copies of the article may be obtained from the De Laval Steam Turbine Company, Trenton, N. J.

Moline Flight Conveyors

The Moline Flight Conveyor illustrated here consists of Moline's Pangborn type flights, interconnected with long link chain. The flight consists of an arm or body which is provided with a throat section having two thick walled pockets;—two half, or "loop" links with shouldered ends that fit into the pockets and a key and cotter pin that hold the loop links in place. The loop links are available with various "pitches" to coincide exactly with the pitch of the chain being used. The conveyors operate in a trough, either horizontally or at inclines up to 55 degs., and differ from other conveyors in that the long link chain is connected into and supported from

NEW MOLINE FLIGHT CONVEYOR

the flights—rather than requiring the flight to be fastened on the chain—permitting the conveyor to scrape cleaner than would otherwise be possible, providing greater capacity, and avoiding any tendency to "ride over" the material.

Due to the use of long link chain, which is in tension rather than in shear when loaded, these conveyors can be used over quite long "centers", avoiding the necessity and cost of using several shorter conveyors to cover an equivalent distance.

Discharge is made either over the head pulley or through gates in the bottom of the trough which can be opened or closed at will, and, when separation is desired, the fines can be discharged through perforated plates and the large material carried along for discharge at a more distant point.

These conveyors have been proved thoroughly in the paper and pulp, lumber and saw-mill industries on the Pacific Coast and are said to offer many advantages including lower first cost, saving in power requirement, and greater capacity when handling any non-abrasive material. Full details, including an illustrated catalogue complete with installation views, etc., may be obtained on request from the Moline Malleable Iron Company, St. Charles, Ill.

New Vertical Centrifugal Stock Pump

Modern designed paper mills call for lower suction chest submergence and emphasis is being placed on low space requirements for all equipment. In order to keep abreast with the trend in modern mill practice, Goulds Pumps, Inc., Seneca Falls, N. Y., have developed a new type of stock pump that will fit these requirements in many cases. This design, while it in no way eliminates the horizontal unit, is particularly adaptable for decker, washer or thickner service. In addition to these two important features of low submergence and space saving, Goulds Figure 3115 Vertical Centrifugal Stock Pump has many other features of interest to every paper mill operator.

Among these features is the accessibility of the rotating element for examination or repair. The shaft, impeller and bearing assembly can be renewed without disturbing the suction or discharge connections.

All passages are extra large and direct allowing free flow of heavy stocks directly into the eye of the impeller, which is of the two vane, warped type with suction facing upwards giving non-clogging performance even with exceptionally heavy stocks.

The bearings are amply large for all loads and with the extra heavy shaft eliminate the necessity of a lower bearing running in the liquid which is a common source of trouble with pumps not having this feature. Axial adjustment, easily obtained provides take up for any wear in the impeller or side plate.

A large rectangular suction connection for mounting pumping on stock chest or other chamber, hand hole for cleaning, and two washout connections directly under back of impeller are other features which makes this a particularly desirable unit for paper mill service. Complete specifications are given in Bulletin 3535-J copies of which will be sent upon request.

N. Y. District To Celebrate Labor Day

CARTHAGE, N. Y., June 24, 1939—Plans are under way by the Northern New York District Council of Paper Mill Unions for the annual Labor Day celebration to be held here on September 4. An invitation from the Carthage Chamber of Commerce was accepted by the council at a meeting early this week at Dexter. A meeting is to be held this week at which two delegates from each of the twenty-six locals in the council will draft the program and select officers who will conduct the celebration. Plans are understood to call for a parade, several band concerts, a baseball game, field events and a council ball. At the meeting this week Frank Callahan, of Deferiet, was elected third vice president of the council to succeed Hubert Burls, of Norfolk, resigned. Delegates from twenty-six locals representing units from Dexter, Carthage, Norfolk, Deferiet, Ogdensburg, Harrisville, Herrings, Gouverneur, Watertown and Oswego attended the session which was presided over by Kyler Paul, of Harrisville, president. Officials of the Watertown state unemployment branch made a proposition at the meeting to create a clearing house for paper mill employees. Under this plan the various locals would appoint a man in each town to work with the branch in securing employment for members. The unit would serve as a placement bureau. A representative of the International Brotherhood of Pulp, Sulphite and Paper Mill Workers reported that the council decided to recommend the proposition to the various locals and instruct delegates to take the matter up with the separate groups.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 28, 1939—Mudge Paper Company has been awarded the contract for furnishing the Government Printing Office with 23,175 pounds (100,000 sheets) of 75 per cent rag, various size lithograph map paper at 10.935 cents. Lowe Paper Company will furnish 50,000 sheets of 22 x 28, 4 ply white railroad board at $20.90 per M sheets. Bids for these items were received on June 12.

National Pulp and Paper Company will furnish 300,000 pounds of newsprint paper in 48" rolls at 2.425 cents, bids for which were received on June 7.

Barton, Duer & Koch Paper Company will furnish 2,318 pounds of 50 per cent rag, 44 x 64 lithograph finish map paper at 9.92 cents; also 25,685 pounds of 75 per cent rag, same various sizes and 8,305 pounds 75 per cent rag, 32½ x 43½ same, as the last two items at 11.27 cents, bids for which were received on June 5.

R. P. Andrews Paper Company will furnish 48,000 pounds (200,000 sheets) of 38 x 50 supercalendered book paper at 4.43 cents and Tamm & Company will furnish 1,000 sheets of 20¼ x 25½ red agate marbled paper at $46.50. Bids for these items were received on May 29.

The Printing Office has received the following bids for 5,200 pounds (25,000 sheets) of 26½ x 41 emerald green coated paper; Barton, Duer & Koch Paper Company, 7.99 cents; John F. Post, Inc., 8 cents; Stanford Paper Company, 12 cents; Mudge Paper Company, 7.89 cents; Whitaker Paper Company, 7.75 cents; Virginia Paper Company, 10.5 cents; and Graham Paper Company, 7.14 cents.

For 10,800 pounds (48,000 sheets) of 50 per cent rag, 39 x 45 buff ledger paper; Barton, Duer & Koch Paper Company, 9.42 cents; R. P. Andrews Paper Company, 10.53 cents; Stanford Paper Company, 9.13 cents; Mudge Paper Company, 9.225 cents.

For 10,000 sheets of 22 x 28 gray photo mount board; Barton, Duer & Koch Paper Company, $35.10 per M sheets; Whitaker Paper Company, $34.18; Mathers-Lamm Paper Company, $35.03; M. S. Ginn & Company, $35.83; R. P. Andrews Paper Company, $36.00; Charles W. Speidel & Company, $36.00; Resolute Paper Products Corp., $36.10; Hurlock Bros. Inc., $36.18; Milton Bradley Company, $35.00; and Mudge Paper Company, $35.00.

To Continue Wage Scale at Glens Falls

GLENS FALLS, N. Y., June 12, 1939—Following a conference of officials of the International Paper Company with labor representatives it was announced by C. E. Youngchild, general manager of the book and groundwood specialties division, that an agreement had been reached to continue the wage scale now in effect. Company officials and delegates conferred for two days at the South Glens Falls plant before reaching an agreement. Delegates were present from the company's mills at Orono and Livermore Falls, Me., Fort Edward, Palmer, North Tonawanda and Niagara Falls. Also attending the meeting were Matthew J. Burns, president of the International Brotherhood of Papermakers; Frank J. Barry, vice president of the organization; John P. Burke, of Fort Edward, president of the Pulp, Sulphite & Paper Mill Workers, and B. A. Stevens, vice president of the organization. The gathering included about fifty delegates.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry announces, through Secretary Macdonald, the election to membership in the Association the following:

Leo Campagnano, mechanical engineer, Hotel Ansonia, New York City, received his doctor's degree from the Polytechnic School of Turin and specialized in pulp and paper. He was formerly with Esercizio della Cartiera di Riva.

Ralph L. Beach, engineer, General Electric Company, Schenectady, N. Y., received his M. S. degree from Rutgers and has been with this company many years. He is a member of the A.S.T.M. Paper Committee D-6.

Gerald Penney, mill superintendent, Bowaters Newfoundland Pulp and Paper Mills Ltd., Corner Brook, Nfld. was educated at Queens University. He was formerly with the International Power and Paper Company, International Paper Company, International Power and Paper Company of Nfld. Ltd. and Newfoundland Power and Paper Company Ltd.

John T. Evans, chart room foreman, Weyerhaeuser Timber Company, Longview, Wash., is a graduate of Washington State College.

Brister B. Pierce, assistant chief engineer, Mill Division, Gaylord Container Corporation, Bogalusa, La., was educated at Louisiana State University and was formerly with the General Electric Company and Baton Rouge Electric Company.

Gordon B. Hanneman, student, New York State College of Forestry, Syracuse, N. Y., has worked for Eastman Kodak Company.

George P. Touey, paper inspector, Container Corporation of America, Philadelphia, Pa., was educated at La Salle College.

Frank C. Campins, engineer, National Adhesives Corporation, New York, N. Y., received the Doctor of Science degree from the Massachusetts Institute of Technology.

Arthur S. Cosler, sales manager and technical director, Bauer Brothers Company, Springfield, Ohio, was educated at Lawrence College. He was formerly with the Columbian Paper Company, York Haven Paper Company, Marathon Paper Mills Company, Forest Products Laboratory and Fraser Companies Ltd.

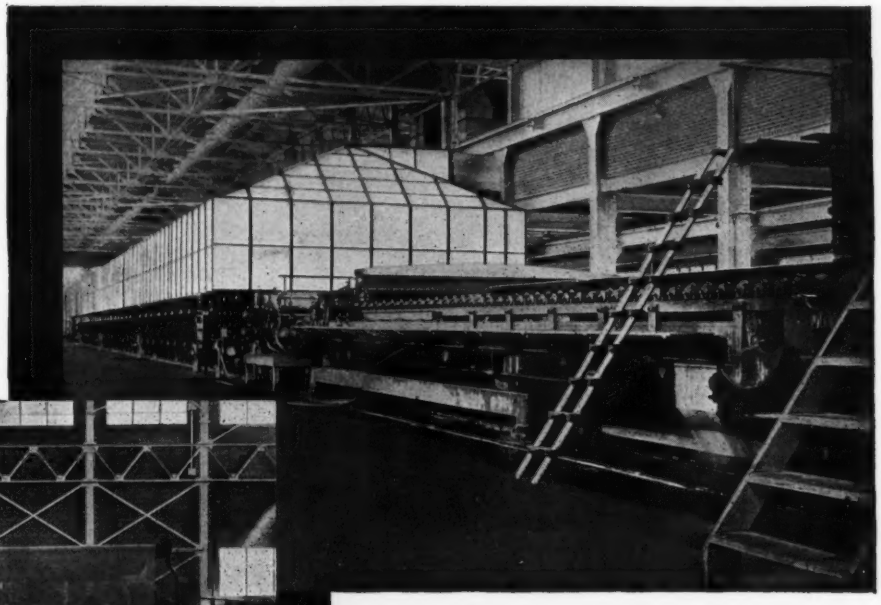
Sweden Exports More Pulp

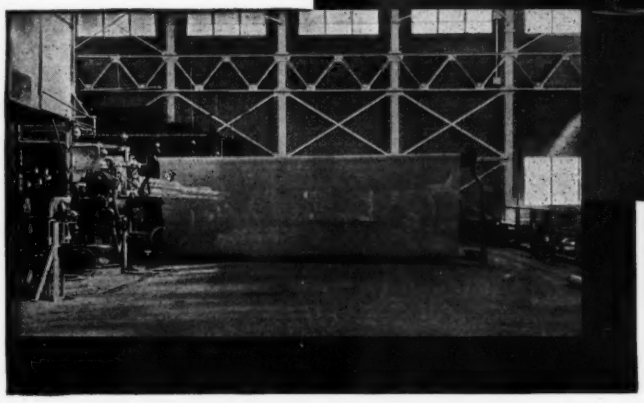
[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 14, 1939—Exports of mechanical groundwood, and sulphate pulp from Sweden were materially higher during the first 3 months of the current year, compared with the corresponding quarter in 1938. Not much change occurred in shipments of sulphite for the same period.

Shipments of paper and board also were consistently higher than in 1938. Exports of newsprint totaled 44,592 metric tons as against 36,359 tons last year. Exports of wrapping paper were about the same, amounting to 60,874 tons during the first 3 months of the current year as against 59,544 tons last year. Sulphate papers constitute practically ½ of the wrapping exports. Shipments of wallboards amounted to 7,296 tons during the first quarter of 1939, as against 4,130 tons last year, an increase of 76 per cent. Other paperboard shipments totaled 14,908 tons, a decrease of 1 per cent compared with last year.

THE BELOIT *Removable Fourdrinier*





● Wire is strung in aisle while machine is in operation, if desired.

● Fourdrinier pit can be washed out while wire is being installed.

● Wire bundle is taken from shipping box and mounted directly in carriage—no chucks to apply—no further handling as bundle is unreeled as carriage moves along to form wire loop.

● All wire poles are mounted in carriage before loop is formed. Inside poles are inserted inside the wire.

● Safest — most convenient — quickest method of installing Fourdrinier wire.

THE BELOIT WAY BELOIT IRON WORKS PAPER MACHY BELOIT, WIS. U.S.A. IS THE MODERN WAY

New Clark Power Utility Truck

"Stubby" is the name of new power utility finger-lift truck designed for general purpose service around paper and pulp mills and converter plants. The machine is only 38 inches wide, chin-high and lifts the bottom of the load to 60 inches. The narrow width, the short wheelbase (38 inches) and the steering mechanism, which enables the truck to pivot on one wheel and make right angle turns, provide maximum maneuverability. The low center of gravity and the position of the driver, comfortably seated on top, pro-

NEW TRUCK IN SERVICE

vide extreme stability and enable the operator to see his pick-up clearly, spot his load accurately. The hydraulic, telescopic lift mechanism derives its power from an engine-driven pump.

It takes hold of any load with as much as 2 inches underclearance, lifts it, carries it at from 1 to 7 miles per hour. In most industries, skid equipment has been designed with 7, 12 and 18 inches underclearance, to accommodate standard types of platform lift trucks. "Stubby" picks up, carries and lifts all three, as well as innumerable loads that have practically no underclearance at all. Rear coupling enables the equipment to be operated as a towing tractor.

Made in several models by Clark Tructractor, Battle Creek, Mich., the machine is gas-powered for 24-hour continuous service.

The April 1939 issue of *By Gum,* published by Reichold Chemicals, Inc., Detroit, Mich., contains articles on "Plastics and Paper" and "Phthalocyanine Colors."

MORE INTENSIVE REFORESTATION

(Continued from page 7)

ers are divided into eight teams named after major league baseball teams, and two groups take part at each meeting.

At one of these question bees last week, the Red Sox defeated the Senators. Jack Limpert, superintendent of the paper mill department, gave a talk on safety. More than 300 employees attended.

Better Facilities for Handling Pulpwood

Better facilities for handling pulp and pulpwood imports, coal and other products for paper mills and other industries are practically assured the city of Marinette, Wis. A bill extending the Menominee River channel 2,500 feet so large vessels can have greater docking facilities has passed the House at Washington, D. C. and is now before the Senate. R. F. Malia, secretary of the Great Lakes Harbors Association, has written a letter to Mayor R. P. Murray expressing confidence the bill will pass. The deepening of the main channel, and development of a turning basin already have been accomplished, and the present project will give the city harbor facilities equal to all other ports on the Great Lakes.

Fox River Traffic Club Holds Meeting

The Fox River Valley Traffic Club, whose members are mostly traffic managers of paper mills and converting plants, met June 22 at Conway hotel, Appleton, Wis., with approximately 100 attending. The speaker was D. W. C. Becker, dean of the traffic management department of La Salle Extension University, Chicago. His subject was "Opportunities in Traffic and Traffic Club Work." Theodore F. Drolsshagen of Menasha, Wis., president of the club, presided at the meeting.

Davis and Koerner Nuptials

Gene Davis, general superintendent of the Riverside Paper Corporation, Appleton, Wis., and Miss Grace Murphy, Appleton, were married June 24 at Sacred Heart church of Appleton. They are spending two weeks in northern Wisconsin on a honeymoon, and will reside at 729 E. Alton St., Appleton.

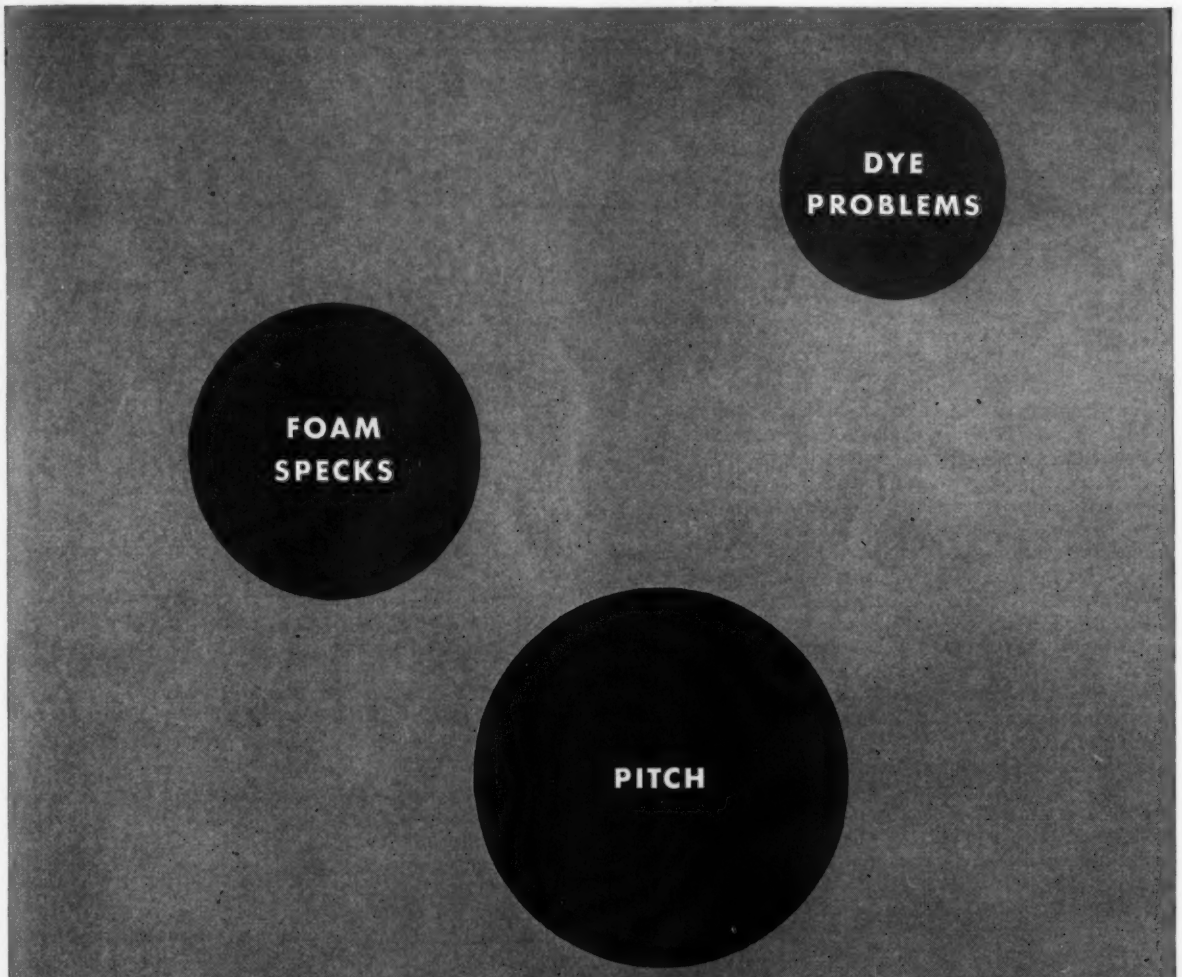
Melvin Gillian of Kaukauna, Wis., chief chemist of the Combined Locks Paper Company, Combined Locks, Wis., and Miss Ellen Dahnke, Green Bay, Wis., were married June 17 at St. Willebrord's church, Green Bay. The couple left on a trip to Canada and New York City, and will reside at 1231 W. Lorain St., Appleton, Wis.

Another wedding June 20 was that of Joseph J. Koerner, electrical engineer for the John Strange Paper Company, Menasha, Wis., and Miss Irene Mueller of Menasha. It took place at St. Mary Catholic church, Menasha.

Melvin Pope of the Fox River Paper Corporation, Appleton, Wis., and Miss Marion Rusch, Appleton, were married June 24 at St. Matthew Lutheran church at Appleton. After spending their honeymoon in Michigan, Mr. and Mrs. Pope will reside at Appleton.

Mersey Safety Plan Successful

MONTREAL, Que., June 19, 1939—Gratifying success has attended a safety campaign carried on at the plant of the Mersey Paper Company, Limited, at Liverpool, N. S., which now announces that the three-month period ending May 31 was completed without loss of time through accident. The plan was introduced at a meeting not only of the employees but of their wives, to whom it was outlined by B. J. Waters, general manager, and J. H. Jones, mill manager. It was called a "war on accidents" and was carried out on a military basis, being under the direction of a commander-in-chief, the general manager, a chief of staff, the mill manager and a field marshal, the safety engineer, with a supporting war council of officers and men and in addition to reward the workers, a series of sweepstakes was introduced.

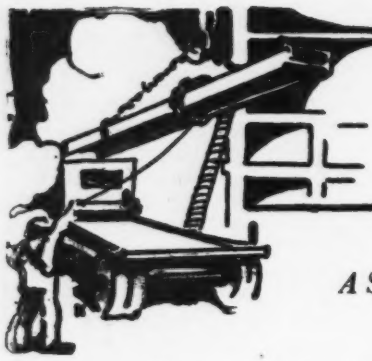


If at this season of the year the water you use in your mill adversely affects the quality of your paper or causes loss of production, we suggest that you confer with our Technical Department.

GENERAL DYESTUFF CORPORATION

GDC 435 HUDSON STREET, NEW YORK, N. Y.

Boston, Mass. Providence, R. I. Philadelphia, Pa. Charlotte, N. C. Chicago, Ill. San Francisco, Cal.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Financing and Operation of Pulp and Paper Mills

General Construction News

Arlington, Tex.—The R. C. Can Company, 101 Chambers street, St. Louis, Mo., manufacturer of paper cans and containers, mailing tubes and allied products, has approved plans for new branch plant at Arlington, where site was recently acquired. It will be one-story, estimated to cost about $50,000, with equipment. General erection contract has been let to Quisle & Andrews, 3320 West Seventh street, Fort Worth, Tex., and work is scheduled to be placed under way at once.

Kansas City, Kan.—The Agar Manufacturing Corporation, Thomas street, Whippany, N. J., manufacturer of corrugated boxes and containers, is pushing erection of new branch plant on Kansas avenue, Kansas City, and will have main structures ready for equipment installation in near future. As previously noted in these columns, plant will comprise a one-story production unit, 150 x 400 feet, with storage and distributing building adjoining of like size, with boiler plant, office structure and miscellaneous buildings. A list of machinery to be installed has been arranged, and will provide for large output. New plant will represent an investment of about $185,000, with equipment. The Fogel Construction Company, Reliance Building, Kansas City, Mo., has the general erection contract. It is proposed to have the plant ready for production early in the fall.

Baltimore, Md.—Oscar T. Smith & Son Company, 407 East Saratoga street, manufacturer of lithographed paper products, has asked bids on general contract for new one-story addition to plant, to occupy adjoining site at 409 East Saratoga street. Cost is reported close to $40,000, including equipment. Work is scheduled to begin at early date. Kubitz & Koenig, Emerson Tower Building, Baltimore, are engineers.

New York, N. Y.—The New York Stationery Manufacturers, 82 Duane street, manufacturers of paper specialties and allied products, have leased space in building at 97-101 Reade street, and will occupy for plant and offices.

Buffalo, N. Y.—E. I. duPont de Nemours & Co., Rayon Division, is concentrating on staple fiber production at local mill on River road, and the manufacture of continuous filament rayon, as heretofore produced at the plant, has been discontinued for an indefinite period. Main offices of company are in the duPont Building, Wilmington, Del.

Montreal, Que.—The Walker Paper Products, Ltd., 101 Murray street, has plans maturing for one-story addition to plant, to be used as a storage and distributing building, and will begin erection in July. It is reported to cost about $150,000, with mechanical-handling and other equipment. C. R. Tetley, 630 Dorchester street west, Montreal, is architect.

Camas, Wash.—The Crown Williamette Paper Company, manufacturer of kraft, manila and other paper stocks, has plans maturing for new addition to mill for expansion in bag-making division, consisting of a four-story structure, about 42 x 225 feet. A portion of unit will be used for bag roll storage department and remainder given over to general production, providing sizable increase in present capacity. New building will be located between an existing mill unit and warehouse structure. It is estimated to cost in excess of $100,000, including equipment. Company is a division of the Crown Zellerbach Corporation, 343 Sansome street, San Francisco, Cal.

Cornwall, N. Y.—The Fresh Pack Waxed Paper Manufacturing Corporation, Cornwall, recently organized with capital of 250 shares of stock, no par value, under direction of Parker, Chapin & Flattau, 285 Madison avenue, New York, attorneys and representatives, plans early operation of local plant for the manufacture of waxed and kindred processed paper stocks for food products and other service.

New Windsor, N. Y.—The Central Hudson Paper Mills, Inc., recently organized with capital of $100,000, plan operation of a mill at New Windsor, Orange County, and will begin production, it is stated, at early date. New company is represented by A. Furman Greene, 317 West Ninety-ninth street, New York, N. Y.

Lufkin, Tex.—The Southland Paper Mills, Inc., now constructing a mill near Lufkin for the production of newsprint, previously referred to in these columns, is reported to have concluded arrangements with the Champion Paper & Fibre Company, Hamilton, Ohio, for all chemical pulp requirements for the new plant, to be furnished from the mill of the latter company at Pasadena, Tex. The new Southland mill will have a rated capacity of 50,000 tons of newsprint per annum and is scheduled to be ready for operation next February. It will represent an investment of close to $5,000,000. Ernest L. Kurth is president.

New Companies, Etc.

New York, N. Y.—The Swarthmore Paper Corporation has been chartered with nominal capital of $1,000, to deal in paper products of various kinds. New company is represented by Davis, Symmes & Schreiber, 21 East Fortieth street, New York, attorneys.

Brooklyn, N. Y.—The Paidge Fiber Corporation has been organized with capital of 2000 shares of stock, no par value, to deal in fiber products of different kinds. New Company is represented by Lewis, Marks & Kanter, 50 Court street, Brooklyn, attorneys.

New Britain, Conn.—The Commercial Paper Company, dealer in paper products, has filed notice of reduction in company capitalization from $20,000 to $14,000.

Detroit, Mich.—The Hinde & Dauch Paper Company, Sandusky, Ohio, manufacturer of corrugated paper boxes and containers, has filed registration of company organization, to operate in Michigan with capital of $11,100,000. Company is now building a new plant at West Chicago avenue and line of Pennsylvania Railroad, Detroit, on tract of about 11 acres of land, previously referred to in these columns, reported to cost close to $500,000, with equipment.

New York, N. Y.—The R. & C. Mounting and Finishing Company has been incorporated with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Barnett E. Kopelman, 225 Broadway, New York, attorney.

Detroit, Mich.—The Michigan Cellulose Corporation, 1435 Lawndale avenue, has been chartered with capital of 50,000 shares of stock, no par value, to manufacture and deal in cellulose products. Kenneth Watkins, 19190 Parkside avenue, Detroit, is principal incorporator and representative.

New York, N. Y.—The Hawes Paper Sales Company, Inc., has been incorporated with capital of 100 shares of stock, no par value, to deal in paper products of various kinds. New company is represented by Samuel R. Rudey, 565 Fifth avenue, New York, attorney.

Lithographic Advisory Committee Meets

The Lithographic Technical Foundation's Advisory Committee for Research on Lithographic Papers held its annual meeting at the Roosevelt Hotel, New York, on February 22. Members present were: Donald Bradner, Champion Paper and Fibre Company; Miss R. M. Karapetoff Cobb, Lowe Paper Company; M. S. Kantrowitz, Government Printing Office; Wm. R. Maull, Mead Corporation; M. J. Neubauer, West Virginia Pulp and Paper Company; Edwin Sutermeister, S. D. Warren Company; B. W. Scribner, National Bureau of Standards; C. G. Weber, National Bureau of Standards; Alfred B. Rode, Lithographic Technical Foundation; R. F. Reed, Lithographic Technical Foundation, Chairman. Also present were the following representatives of companies providing financial support for this research and not already represented on the Advisory Committee: Wm. Beckett, Beckett Paper Company; W. A. Kirkpatrick, Allied Paper Mills; R. T. Ode, Providence Lithograph Company; E. W. Poor, W. C. Hamilton & Sons; Harry Porter, Harris-Seybold-Potter Company.

Mr. Weber presented a progress report covering work done during 1938. Studies of the time required for cold paper in cases and on skids to attain temperature equilibrium with the pressroom atmosphere, for various temperature differences, have been completed. Results will be published in the near future.

A description was given of a new method of control in paper conditioning developed by the Bureau of Standards, and in practical operation in the lithographic department of the U. S. Coast and Geodetic Survey. This system has not only resulted in better conditioning, but it has greatly reduced the conditioning time. Heavy, surface-sized chart papers that required twenty-four hours or more for conditioning by conventional methods are now fully conditioned in six hours. Details of method and equipment will be made available to the trade.

Studies are in progress on the permeability to moisture of various protective wrapping papers and on effectiveness of sealing methods for case and skid-wrapped paper. The tests so far have been limited to asphalt duplex papers, and other types of wrappers remain to be investigated.

A comprehensive study of the effect of fiber types and mechanical processing methods on the characteristics of offset paper was started December 1, 1938. The results of seven paper-machine runs with Eastern sulfite pulp were presented. Studies remain to be made on other sulfite pulps, and on soda, bleached craft, and rag pulps. Such mixtures as are in use commercially, and those indicated by the results to be of value, will also be studied.

The research on lithographic papers during 1938-9 is made possible through voluntary contributions of funds and supplies by sixteen interested companies together with the generous cooperation of the National Bureau of Standards and the U. S. Coast and Geodetic Survey.

Rapid Mill Construction

It looks as if another time record in paper mill construction for Merritt-Chapman & Scott Corporation, is in the making at Lufkin, Tex., where this general contracting firm is building the Southland Paper Mill.

A representative of Merritt-Chapman & Scott visited the plant of the Pusey and Jones Corporation the other day in Wilmington, Del., and reports that work is progressing at top speed and that part of the frame for the huge paper machine has already been shipped.

The big machine shop is humming with activity. Felt, press, couch and calender rolls, each of which will play a separate part in the intricate process of converting pine logs into newsprint, are being machined and ground preparatory to shipping. Roll frames were being laid out on the assembly floor, while sheet metal and other parts were in process of completion elsewhere in the plant on a smoothly coordinated program that promises a completed schedule with everything shipped ready for erection before the end of August.

This paper machine will have a number of innovations, including a new type Fourdrinier frame, that part of the machine on which the 14-foot wide sheet of paper will be formed.

Paper will be made at the speed of more than a quarter mile a minute which will make this one of the fastest machines ever built for newsprint. At this speed the Southland Mill will have a capacity of about 50,000 tons of paper a year.

Foundations for the huge newsprint machine have already been poured and all of the construction work at Lufkin is fully on schedule so that, barring accident, Merritt-Chapman & Scott expect to add another construction record in the building of paper mills in the South.

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Henry J. Berger
EDITOR

Ronald G. Macdonald
Editor Technical Section

Lynne M. Lamm
Washington Correspondent

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COMING EVENTS IN PAPER INDUSTRY

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Fall Meeting, Syracuse Hotel, Syracuse, N. Y., September 12-14.

NEW ENGLAND SECTION. Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Roger Smith Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION. Technical Association of the Pulp and Paper Industry—Second Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION. Technical Association of the Pulp and Paper Industry—Second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION. Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park, American Hotel, Kalamazoo, Mich.

NATIONAL SAFETY COUNCIL, PAPER AND PULP SECTION, Annual Meeting, Atlantic City, N. J. October 16-20.

PROFIT-SHARING

The advantage of profit-sharing have been frequently cited as a more desirable method to promote the efficiency of employees than the straight wage plan, the chief reason being, of course, that in profit-sharing the worker is more closely identified with the business and becomes, if only to a limited extent, a partner in the enterprise. The principle of profit-sharing is an attractive one and a strong case for adoption can be made out of this theory of the worker participating in the profits to which he has contributed through his labor.

Profit-sharing has been advocated and practiced for more than one hundred years. The report of the Senate Financial subcommittee headed by Senator Vandenberg of Michigan, contends that the present wage system is responsible for most of the labor troubles and that sharing of profits with employees was "essential to the ultimate maintenance of the capitalistic system." The 351-page report, covering a study of ten months said in part: "Wages will never settle the labor problem, because the saturation point will never be reached. Wage increases create the same result as the serving of red meat to animals at the zoo—satisfaction for the moment, a more ravenous appetite later. The worker's income must be automatically related to the rise and fall of the price structure. If this is done a proper balance will always be maintained.

"On this basis, and with such a flexibility, the peaks and valleys of unemployment; of industrial progress and prosperity; of labor unrest, will be leveled and stabilized. Blend the wage scale with a profit-sharing differential and the same human being who was previously concentrating his attention on wages, and constantly fighting for higher wages, will discard the combative spirit and move in a cooperative direction—his self-preservation instinct previously centered only on a flat wage scale will cease."

The subcommittee made no recommendations for legislation to compel adoption of profit-sharing but suggested that: (1) Payments to employees from accumulated profit-sharing retirement funds be exempt from all income taxes. (2) That the Federal Government issue special "profit-sharing fund" bonds, available only for profit-sharing funds and to be used for the protection of profit-sharing fund investments. The committee contended that instability of security values and low interest rates in recent years had made it difficult to invest such funds safely. "In the midst of a tendency generally to condemn private business as selfish", the report stated, "and reactionary, the committee takes pleasure in pointing to the accompanying record proving that there has been a vast, voluntary experimentation with various types of profit-sharing which demonstrates the existence of widespread social-mindedness in American business."

The major objectives cited were (1) Insurance of employment income, and (2) financial security in old age. To achieve these objectives the committee recommended the adoption of a plan under which both workers and employers would contribute. A stipulation was included that the trustee should be required to disburse a portion of the fund to guarantee livable wages in periods of partial or complete unemployment.

The program filed with the Senate is similar to the profit-sharing plan followed for some years by Sears, Roebuck & Company, the Joslyn Manufacturing and Supply Company and other concerns. On June 19 the W. A. Sheaffer Pen Company, announced that an employee profit-sharing payment of 12½ per cent, or one-eight of each employee's earnings for the six months ended May 31, would be distributed on June 28. This compared with the December 16, 1938, payment of 10 per cent, and a payment of 7½ per cent a year ago. All employees, regardless of length of service or status, shared in the payment. The company has 1,100 employees and this is the eight consecutive distribution of payments ranging from 4 to 12½ per cent.

The more important provisions of the profit-sharing plan recommended by the Senate subcommittee are as follows: (1) That the employees contribute to a fund a certain percentage of their salary or wages and that the employer contribute a definite pre-determined percentage of the company's net earnings. (2) That all employees be required to join the fund after a preliminary apprentice service of two or three years. (3) That during the period apprenticeship a bonus, preferably in preferred stock of the company,

be distributed to the apprentices as a dividend on their annual wages—this bonus later to be credited to the workers' equity in the general profit sharing fund when they become eligible for membership. (4) That the fund be managed by a five-member advisory board, two elected by the employees, two by the corporation and the fifth to be an executive of the corporation who would serve as trustee. (5) That the portion of the fund contributed by the employees be invested only in securities which State laws list as suitable for trust funds, the portion contributed by the corporation to be invested at the discretion of the advisory board and the trustee, but only in sound bonds, preferred stock, and mortgages—never in common stock.

(6) That the total amount accrued to the account of the individual worker be paid to him at retirement or when he becomes totally disabled, retirement to be voluntary at 60 or 65 years of age. A worker who is discharged or who leaves would be paid upon leaving the company, all that he had contributed to the fund as well as interest thereon, plus a specified percentage of the amount which the company had contributed for his account.

The committee found that more than 9,000 companies were operating some form of employee benefit and welfare plan and that 728 had plans of a definite profit-sharing nature. Of the latter companies, the committee stated 374 reported profit-sharing disbursements in 1937 of more than $136,000,000, an average of more than $360,000 per company. Such a plan, the report stated would "make capitalists of the workers, completely changing their thinking attitudes toward the industrial system—an imperative national need."

All Dexter Departments Running

[FROM OUR REGULAR CORRESPONDENT]

DEXTER, N. Y., June 24, 1939—Virtually all departments of the Dexter sulphite, Pulp and Paper Company, are expected to be in full operation within the next few days with the exception of the bag department. For the past week or two they have been shut down awaiting an accumulation of sufficient orders but these have been secured to the point of warranting a resumption of operations at the Frontenac mill early this week. By the beginning of next week at the latest the sulphite plant is expected to be operating again. It was the last to open after equity receivers took over and reconditioned the mills for the Reconstruction Finance Corporation which holds a $350,000 first mortgage. After the sulphite mill started up a few weeks ago it was employed in the making of samples for the trade and these samples of high grade sulphite pulp have proven satisfactory to the receivers who were appointed to manage and operate the property early in the spring by Federal Judge Frank Cooper. The receivers are Brayton C. Foster and Winfield E. McIntyre. During the past several weeks the mill has been building up a substantial pile of pulpwood which is said to be sufficient to guarantee operations for a considerable length of time.

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES[1]

Months	1939	1938	1937	1936	1935	1934
January	77.5%	63.9%	90.3%	76.1%	65.8%	.....
February	81.7%	68.7%	90.1%	77.9%	70.0%	.....
March	84.1%	69.6%	90.3%	76.0%	70.5%	.....
April	82.9%	68.3%	92.1%	82.3%	70.0%	.....
May	80.3%	69.0%	90.6%	81.6%	69.4%	.....
June	.....	66.0%	87.3%	80.7%	72.3%	.....
July	.....	72.0%	81.8%	77.3%	64.9%	.....
August	.....	77.2%	82.9%	81.5%	70.9%	.....
September	.....	76.3%	78.6%	80.5%	71.9%	58.2%
October	.....	82.5%	73.5%	87.6%	75.6%	64.7%
November	.....	79.6%	61.9%	88.0%	75.3%	61.7%
December	.....	74.4%	54.5%	85.9%	71.2%	59.6%
Year Average...	.....	72.3%	80.6%	81.3%	70.5%	.....
First 24 weeks..	81.0%	67.5%	90.3%	79.1%	69.2%	.....

COMPARATIVE WEEKLY SUMMARIES[1]

CURRENT WEEKS, 1939		CORRESPONDING WEEKS,	
May 13	81.9%	May 14	67.7%
May 20	81.5%	May 21	69.7%
May 27	80.1%	May 28	71.4%
June 3	74.1%	June 4	62.5%
June 10	77.9%	June 11	64.9%
June 17	75.0%	June 18	66.1%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting—Current Weeks					
Ratio Limits	May 13, 1939	May 20, 1939	May 27, 1939	June 3, 1939	June 10, 1939	June 17, 1939
0% to 50%	63	62	54	90	63	53
51% to 100%	240	241	250	204	214	155
Total Mills Reporting..	303	303	304	294	277	208

PAPERBOARD OPERATING RATIOS

Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

Year	Jan.	Feb.	Mar.	Apr.	May	June	July
1935	62%	68%	68%	63%	61%	66%	62%
1936	62%	67%	67%	70%	69%	70%	69%
1937	80%	86%	86%	88%	85%	77%	66%
1938	54%	60%	61%	57%	58%	56%	57%
1939	60%	67%	71%	69%	....	....	....

Year	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1935	67%	71%	77%	71%	61%	66%
1936	75%	78%	82%	80%	74%	72%
1937	74%	69%	65%	55%	45%	73%
1938	66%	66%	70%	65%	59%	61%
1939	....	....	....	....	....	....

Week end. May 13, 1939—65% Week end. June 3, 1939—57%
Week end. May 20, 1939—65% Week end. June 10, 1939—66%
Week end. May 27, 1939—66% Week end. June 17, 1939—67%

[1] Production-capacity ratios are based upon six-day capacity ratings which are adjusted periodically to correspond with the ratings reported by individual companies. Ratios are subject to revision until all reports are received.

R. P. Brown Gets Appointment

Richard P. Brown, who was recently appointed by Governor Arthur H. James to be the first secretary of the new Department of Commerce of the Commonwealth of Pennsylvania, is the former president and now chairman of the board of the Brown Instrument Company and vice-president of Minneapolis-Honeywell Regulator Company.

Mr. Brown has been interested for some years in the industrial development of Pennsylvania, with the objective of increasing the number of jobs in private industry and thereby reducing the relief load and in turn the taxes necessary to support those on relief.

The new Department of Commerce is not only to aid Pennsylvania's industries in their successful expansion and development, but it was also authorized by the Commerce Law to recommend future legislation to the Pennsylvania Legislature which can be of help to Pennsylvania industries.

Mr. Brown's past business training of thirty years devoted to the manufacture of measuring and controlling instruments for use in industry, should stand him in good stead in his new position as Secretary of Commerce of Pennsylvania.

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Section of the
Technical Association of the Pulp and Paper Industry

Edited by Ronald G. Macdonald, Secretary

Effect of Atmospheric Humidity on Paper And Printing*

By W. C. Dahl [1]

Abstract

The difficulties experienced in the use of paper under variable atmospheric conditions occur principally in printing plants. In this industry considerable loss of time and production occurs from causes difficult to immediately control when the paper has once gone to the presses. Such are the effects of too great humidity in the press room, or a wide variation between the moisture content of the paper and the surrounding air. These conditions cause the edges of the sheets to become wavy and to give considerable trouble in printing. Likewise static electricity, resulting from frictional effects under printing conditions of abnormally low relative humidity and temperature, results in printing problems. These difficulties could be quite materially reduced if the right moisture conditions were brought into agreement both in the air and in the paper prior to printing.

No over emphasis can therefore be placed upon the need for closer cooperation between the paper manufacturer and the printer in determining the conditions and technique of handling under which paper products can be brought to most artistic, economical and practical uses.

Definition of Humidity

Humidity may be classified as "absolute" and "relative". Absolute humidity has been defined *(1)* as the actual number of grains of water held in suspension by one cubic foot of air, at any given temperature" and relative humidity as "the numerical relation or ratio between the number of grains of water held in a cubic foot of air, and the number it is possible for it to hold at a given temperature."

For example, at 70 deg. F. temperature, one cubic foot of air is capable of holding, at its saturation point a maximum of 7.98 grains of water in the vapor form. If then, at this temperature of 70 degrees, one cubic foot of air contains 3.99 grains of water, the relative humidity is 50 per cent, since the relation between the amount of water actually held and that which could be held by the same volume of air when saturated, is 50 per cent, the figure 3.99 being 50 per cent of 7.98.

There is no doubt that nearly all troubles attributable to atmospheric conditions experienced by printers and lithographers are due to variations in relative humidity.

Expansion and Contraction as Causes of Misregister in Printing

Paper, since it is composed of a felted mass of minute vegetable fiber, is hygroscopic, that is, susceptible to humidity changes. It absorbs or gives up moisture with every change in the amount of water vapor in the air. With an increase in humidity, the individual fibers absorb more moisture and consequently swell or lengthen themselves. The combined swelling or lengthening of the mass of minute fibers causes a lengthening in the sheet size. A decrease in the relative humidity causes contraction of the paper stock. These changes in sheet sizes make accurate register difficult. The type of printing most affected by changing weather conditions is multicolor reproduction. Here exact register is necessary and this is seriously affected by expansion and contraction of the paper from changes occurring in the moisture content of the surrounding air.

Dimensional changes due to varying humidities are greater across the grain of the paper than with the grain. It has been stated *(2)* that a variation in relative humidity of 5 per cent, and, in case of fine screen color work, a variation of as little as 2 per cent, may cause faulty register and consequent impairment of the appearance of the work.

C. G. Weber *(3)* studied the reactions of lithographic papers to variations in atmospheric humidity and temperature. Samples of lithographic papers were conditioned and tested in atmospheres of 30, 45, 65 and 75 per cent relative humidity. He found that in an atmosphere of 45 per cent relative humidity different papers showed a minimum variation in expansion. Slight variations of relative humidity from 45 per cent produced changes in expansion of smaller magnitude than occurred when other humidities were taken as standard. These findings would seem to point toward 45 per cent relative humidity as having definite advantages for lithographic plants.

He also found the moisture condition of the surrounding air determined the moisture content of lithographic paper which governed to a considerable extent its properties, particularly the dimensional changes.

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Washington, D. C., June 13-15, 1939.

[1] Foreman, Postal Card and Money Order Section, U. S. Government Printing Office, Washington, D. C.

Humidity changes were observed to be most important, a 10 point change being sufficient to cause such variation in the moisture content of the sheet as to result in altered dimensions producing serious misregister.

Curl

Curled paper offers serious resistance to feeding the stock through the press and to maintaining register while printing.

Curl may be classified into three types: inherent curl, which shows up immediately on the cutters; delayed curl, which shows up after the paper has stood for some time; and moisture curl, which is due to the effort of the paper to come to equilibrium in moisture content with the surrounding atmosphere. Inherent and delayed curl may be due to several factors such as uneven finishing, greater absorption of the tubsize by one side of the sheet, uneven rosin sizing and the structural difference between wire and felt sides all of which contribute toward two-sidedness of the sheet. Curl is sometimes caused by one side of the sheet of paper being more coherent, that is, having its fibers more closely bound together, than those of the other side.

Hanson *(5)* believes that the fundamental cause of curling paper is a stress existing in the paper fibers when the paper is formed. This fiber stress manifests itself in pushing and pulling of the separate fibers and so a distortion from the condition of flatness results. He states that this distortion may asume various forms, chief among them being (1) a curl to the wire side, in which case the wire side is concave and the curly edge is in the machine direction, (2) a curl to the felt side, in which that side becomes concave with the curly edges in the cross direction, the paper taking the coiled position in which it is usually reeled up, and (3) a combination of these two types of curl, causing one corner of the sheet to go one way and the opposite corner another. Fiber stresses may also be the cause of wavy edges sometimes met in thick layers of cut paper in cases or on skids.

Moisture curl can be controlled by establishing proper humidity conditions and proper storage. It disappears when the moisture content of the paper reaches equilibrium with that of the surrounding atmosphere.

The grades of paper which have shown, in our experience, marked tendency to curl are postal card bristol, index, calendered tag, lithograph finish map, supercalendered book, and offset book papers. In the case of postal card bristol, it was found that, notwithstanding the high speed of the postal card presses, the cards curled and seriously interfered with production. Investigation revealed that some postal card paper delivered to the Government Printing Office contained between six and nine per cent moisture which, in adjusting itself to a lower moisture content existing in the air of the pressroom, caused the cards to curl. Paper containing approximately four per cent moisture was found most suitable for reducing this tendency of United States postal cards to curl. Therefore, the present specifications for postal card bristol include the requirement that it shall contain approximately four per cent moisture.

Trouble of this sort is experienced with thin papers, such as manifold, to a greater extent than with thick papers, since they present less physical resistance to the tendency to curl.

Wavy Edges

The edges of paper stacked in piles often become wavy, especially during the summer months when high relative humidities exist in the pressroom. This is attributed to the fact that during the increase in relative humidity the cut edges, where the fibers are exposed, absorb moisture more easily and rapidly than the center of the sheet. The edges, therefore, increase in length and are restricted from a uniform expansion by the body of the sheet which is held under pressure in the piles. Localized strains, thus set up, result in the formation of wavy edges.

Wrinkling

It is apparent that such irregularities in the sheet may result in permanent wrinkles or creases especially in lithographic or offset printing, there being no depressions in the form to accommodate these irregularities. Wrinkling on the presses is sometimes caused by rather rapid changes in relative humidity and the consequent stresses set up in sheets that are endeavoring to bring themselves into equilibrium with the changing atmospheric conditions.

Static Electricity

The friction caused by the passage of paper through the printing press generates static electricity. Moist air dissipates electrical charge developed on the paper, by the virtue of being a conductor of electricity and dry air, being an insulator, causes the charge to be retained. Static is most often experienced when the relative humidity drops below forty per cent. It is frequently responsible for sheetfeed hangups, for delivery troubles, for failure of joggers to function and for clogging of folders.

There are several methods of controlling static electricity in the pressroom. One common and effective one is by means of electric neutralizers. These consist essentially of a series of fine metal points, electrically charged with alternating current. Thus the contacts are alternately charged with negative and positive electricity. These charges leak away from the points and neutralize any charges of opposite polarity which have built up on the paper.

Another method of removing static electricity from paper consists in arranging a series of grounded conducting points such as fine wire brushes or tinsel wrapped around a wire close to the sheet. This method utilizes the well known principle of the lightning conductor in dissipating electrical charges. A flame can act as an electrical ground and the gas heaters, with which flatbed presses are often equipped, help to discharge any static electricity present in the paper. However, this method tends to reduce the moisture content of the sheet somewhat and thus renders it more susceptible to static electricity if subjected immediately afterwards to frictional forces.

The installation of steam boxes on web presses for moistening the web of paper before entering the printing cylinders, has been found very satisfactory in the reduction of static electricity during press operation.

Since static electricity develops most frequently on dry papers used in an atmosphere of low humidity, one way to minimize it is to ensure that the paper has a reasonably high moisture content and that the relative humidity of the pressroom does not fall below 40 per cent.

Web Breaks

Low humidity in the pressroom is responsible to a

large extent for web breaks. Humidification of the pressroom will reduce the number of web breaks caused by brittleness at the edges of the paper. In studying the effect of humidity on newsprint breaks, it was found *(6)* that the higher the humidity in the pressroom the fewer were the web breaks. Grant believes that this is due to the fact that the absorption of moisture by the paper from the air, or prevention of the loss of moisture makes the sheet more pliable, reduces its static electricity charge, and allows it to pass through the press without sticking to rollers and apron thus reducing the tension.

Cracking of Coated Paper

Difficulty caused by cracking of coated paper is experienced during the winter season when excessive dryness of the air in the heated pressroom causes the paper to lose its pliability. Under these conditions the coating may crack while passing through the folding machines. This will occur not only in the case of coated paper but also to a lesser degree in the case of certain other stocks when the relative humidity of the atmosphere is excessively low.

The solution of the difficulties which arise from such variable conditions in the atmosphere of the pressroom appears to lie in establishing suitable and constant relative humidity.

Conditioning Paper

Weber and Geib *(7)* found that commercial papers give best register when they are conditioned to equilibrium with a relative humidity 5 to 8 per cent above that of the pressroom prior to printing and are printed under constant conditions. They recommend where facilities for conditioning paper are not available that the moisture content of the paper should be so adjusted at the mill that it will contain 0.5 to 1.0 per cent more moisture than when it is in equilibrium with the atmospheric conditions of the pressroom.

The maintenance of atmospheric conditions of approximately 50 to 55 per cent relative humidity and 75 deg. F. temperature in the postal card and money order sections of the Government Printing Office and the installation of equipment in the job pressroom for increasing the relative humidity during the winter season to between 40 and 50 per cent have resulted in securing increased production and in eliminating pressroom difficulties attributable to changing atmospheric conditions.

Effect of Relative Humidity on Physical Tests

Physical tests such as folding endurance, tear resistance, stretch, tensile strength, bursting strength, smoothness, oil penetration and porosity are affected by relative humidity. Folding endurance, tearing resistance and stretch increase considerably with increase in relative humidity. Tensile strength and bursting strength increase up to the point of about 40 per cent relative humidity and then decrease with increasing relative humidity.

Marked increases have been found *(8)* in the folding endurance of rag content book, bond and ledger papers as the humidity increased. The increase between 45 and 65 per cent relative humidity varied from 40 per cent to 253 per cent in the machine direction and from 0 to 104 per cent in the cross direction. Kraft, rope and unbleached sulphite wrapping papers also showed marked increase in folding endurance at 65 per cent over the results obtained at 45 per cent, the figures increasing in the machine direction 276 per cent for kraft, 334 per cent for rope and 749 per cent for unbleached sulphite, and in the cross direction 66 per cent for rope, 135 per cent for kraft and 330 per cent for unbleached sulphite.

We have had occasion to determine *(9)* the effect of relative humidity on smoothness of newsprint, machine finish, antique, supercalendered and coated book papers. A series of tests were made at 50 per cent relative humidity and 70 deg. F. temperature and the same samples were then again conditioned and tested at 65 per cent relative humidity and 70 deg. F. temperature. The results obtained at 65 per cent relative humidity were approximately 10 per cent lower than those obtained at 50 per cent relative humidity.

The influence of humidity on the oil resistance of paper has been studied *(10)* and it has been found that the oil resistance decreased with increase in relative humidity.

Paper Testing Conditions

Since the physical properties of paper are largely affected by changes in relative humidity, it is essential that the physical tests be made at uniform standard atmospheric conditions, in order to obtain consistent results which may be duplicated not only in the same laboratory but also in other laboratories.

Paper testing, whether associated with fundamental research, mill control or sales to the consumer, all center in the purpose of determining the suitability of paper for industrial uses. Therefore it appears logical to test papers under conditions which most closely coincide with those surrounding its use, so that the test results may, to a large extent, predict the quality of performance of the paper in operations. For this reason the Joint Committee on Printing of Congress in December, 1923, and the Federal Specifications Board in January, 1925, adopted 50 per cent relative humidity as a standard for testing. Therefore the specifications for all papers purchased by the U. S. Government are based upon tests made at 50 per cent relative humidity and 70 deg. F. temperature.

Effect of Atmospheric Conditions on Ink

Inks vary in composition and consistency. They are essentially composed of pigments, varnishes and driers, all of which are more or less susceptible to absorption of atmospheric moisture. Printing inks must dry rapidly to prevent offsetting and smearing. The setting and drying of inks result partly from absorption into the paper and partly from oxidation upon the surface. If the relative humidity, and consequently the moisture content of the paper, is high, it tends to prevent ink penetration and more ink remains on the surface than can be quickly oxidized. The quantity of moisture absorption affects the drying time, the intensity of colors, and the uniformity of the ink on the surface. This lay of the ink is sacrificed if humidity conditions vary considerably during a run.

Humidification in the pressroom where the relative humidity is low tends to reduce the formation of ink mist. Concerning ink mist or flying ink it has been said *(11)* that this unpleasant feature of most pressrooms has never been satisfactorily explained. However, one of the causes of it appears to be the generation of a small static charge of electricity on finely divided ink particles thrown off by centrifugal force from the rollers when running at high speed. Humidification, tending to dissipate this static charge does actually cut down this difficulty. The formation of

ink mist appears to increase somewhat according to the square of the velocity of the press and as presses increase in speed the problem becomes more acute. The ink mist problem has been treated with some success by humidification and by dilution, that is supplying to the pressroom a large quantity of outside air and furnishing a positive exhaust.

It has also been stated in connection with newspaper printing *(11)* that another surprising result of the humidification of a pressroom is the reduction in ink consumption of an order of 10 per cent. This is probably due to the fact that, with paper and rollers in optimum printing condition, less ink needs to be run to secure proper color.

Ink Offset

The drying of printing ink is retarded by the presence of excessive moisture at high relative humidities and this may result in offset of the ink onto the backs of succeeding sheets during the printing process.

Effect on Rollers

Rollers are made chiefly of glue and glycerin. They absorb or give off moisture with increase or decrease in relative humidity of the surrounding air. These changes cause corresponding swelling or shrinking of the rollers and thus affect their resiliency and tack.

If the humidity is high the glycerin or other hygroscopic agents in the rollers attract atmospheric moisture and they then repel rather than attract the ink. In such a case thin inks may smear and tacky inks pull out in streaks, because of their cohesion rather than affinity for the glue-glycerine composition. Lumps or ridges of ink result rather than an even well distributed film, and these are transferred to the paper in such a manner as to produce a mottled effect.

In atmospheres of too low humidity rollers have a tendency to dry out and crack.

Research in the Government Printing Office has resulted in developing composition rollers less susceptible to humidity changes than those of previous manufacture. This was accomplished through experimental work with glycerine substitutes. Sorbitol, a hexahydric alcohol is now being used in partial substitution for glycerin in composition rollers manufactured by the Government Printing Office. Loss of moisture causes the shrinking and hardening of composition rollers, and the presence of a hygroscopic substance such as glycerine or sorbitol reduces that loss. Sorbitol is a very effective hygroscopic agent for this purpose. It has a narrower humectant range, and this is less susceptible to changes in atmospheric conditions, than glycerine; therefore at high atmospheric humidities it takes on less moisture than glycerine. At low humidities it dries out more slowly than glycerine and thus has a stabilizing effect on the moisture content of the rollers.

Make-ready Difficulties

In certain types of fine printing the make ready is of great importance and sometimes costly in time outlay. In this case the maintenance of a constant relative humidity is of great assistance to the work. Changes in the moisture content of the press cylinder packing, and the make ready affect the pressure between the cylinder and the plate. If too much moisture is absorbed from the air by the packing the cylinder will "ride the form," producing a faulty print and causing excessive wear on the type and plates.

Halftone Printing

In halftone printing from blocked cuts a difficulty is sometimes experienced in the change in the height of the printing surface due to absorption of moisture by the wood block or by its drying out attending changes in the atmosphere. Again, the printing obtained from halftones is facilitated by the proper moisture being in the paper at the time of printing. In the case of coated paper, for instance, the paper takes ink more readily and smoothly on heavy backgrounds and solids, when it contains a moderate quantity of moisture, than when it is too dry. When the relative humidity is too low, the surface becomes too dry and powdery. This condition prevents the best lay of ink and results in giving a gray appearance to the print.

Conclusion

Here may we suggest that paper makers have a good opportunity to assist the printer in overcoming or at least reducing some of his paper troubles.

Certainly these objectionable features in the use of paper, misregister, curling, wrinkling, wavy edges and static incident to atmospheric conditions surrounding its use, are not entirely attributable to the paper maker. He may deliver to the printer, papers with the right fiber structure and finish and the right moisture content, but his interest should not cease there. If he can conduct a campaign to urge the continuation of humidity and temperature control to the completion of the process, he will be doing much to further his own product and assist the progress of printing.

This desirable link between the two processes can be welded into a stronger chain by such publications and meetings as these, and by circulating the facts among both groups—the paper makers and the paper users.

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Norway's Export Trade

The Blix Publishing Company, Oslo, Norway, has published in English an attractive and informative cloth bound book on "Norway's Export Trade," with many interesting illustrations. The nation's contribution to the World's Fair and its many important industries are described. A view of the Borregaard pulp mills and the paper mills at Skatfos are pictured. The commissioner general of the Norwegian Exhibition is Fr. Odfjell and Lorentz Vogt, president of the official committee, under the heading, "Norway in New York," contributed a description of Norway's participation in the New York World's Fair.

Paper Defects *

By L. K. Johnson [1]

For approximately 30 years the Government Printing Office has been purchasing under technical specifications various grades of paper ranging from newsprint to the highest quality of bond, ledger and index. Government specifications for paper are drafted by a committee designated by the Joint Committee on Printing of Congress and are revised semi-annually or annually to conform to the needs of the governmental service and to new developments in paper manufacture and in printing.

In conformity with these paper specifications, the testing of paper at the Government Printing Office consists of two distinct phases: first, technical testing covering microscopical, physical, and chemical requirements; and second, visual examination of the paper surfaces for comparison with standard samples which show the desired characteristics of color, formation, cleanliness and surface finish.

Reasons for Rejections

It is stated in the Annual Report of the Public Printer for 1938 that 5,881 samples of paper were tested during the fiscal year ended June 30, 1938. These samples were representative of deliveries constituting 83,153,863 pounds of paper, purchased by the Government Printing Office. There were rejected 118 deliveries amounting to 3,086,197 pounds or 3.7 per cent of the total amount of paper received. The following table gives the causes for rejection, the number of rejections, and the poundage of rejected paper:

Cause of rejection	Number of rejections	Pounds
Deficient in:		
Bursting strength	3	55,050
Folding endurance	18	226,540
Tensile strength	10	460,815
Opacity	11	457,607
Thickness	5	262,940
pH value	9	237,693
Not within weight tolerance	5	77,524
Excessive rosin	3	10,314
Unsatisfactory general appearance	38	816,246
Unsatisfactory color	6	171,537
Unsatisfactory finish	10	309,931
Total	118	3,086,197

These defects in paper qualifications, which cause rejection, may well be discussed here in order that a clear picture may be obtained of the importance to large scale printing processes of employing technical methods in the selection of the raw materials in order to facilitate production.

Technical Tests

Without resort to scientific tests, which in a measure predict the printability or serviceability of paper, much delay in production might be occasioned by a trial and error method of selection. In the Government Printing Office, for example, the volume of printing done, necessitates that presses shall not mark time awaiting the suitable adjustment of paper and ink to get the job under way.

This then is the reason for rejections of paper deliveries based upon technical tests which may be briefly outlined. Methods of testing and other technical details are not here of special import. The greatest interest lies in their practicality, when correlated with the printing qualities of paper and its serviceability for specific uses. Technical tests serve to predict performance of the paper under printing operations and usage, and in many instances prevent unsatisfactory results.

Bursting Strength.

The bursting strength test holds a time honored position in government paper specifications. This test is one of the oldest and most widely used for measuring the strength of paper. The results of the test give an indication of the ability of a paper to resist strains which tend to rupture the fibers when the paper is subject to actual use.

Folding Endurance.

This test is universally regarded in the paper industry as the most dependable of the strength tests for indicating the quality of papers required to resist considerable handling. The specification requires the paper to withstand a minimum number of double folds in the machine and the cross directions, therefore the paper must be tested in each of these two directions and the results separately reported.

The folding endurance test indicates the brittleness of the fibers and consequently the comparative strength along and across the sheet. Paper having a low folding endurance will not withstand handling to the same degree as paper possessing high folding endurance. This is true in general even if the paper is not directly subjected to folding operations. Low folding endurance may be due to deficiency in the kind of fibers specified, to an inferior quality of the fiber stock, to improper treatment of the stock during manufacture or to the way the sheet has been formed on the paper machine.

Low folding endurance due to the manner of formation, is experienced when the flow of the stock in suspension travels at a rate of speed too fast for the proper matting of the fibers. This generally results in the formation of greater strength in the machine direction of the paper with low results in the cross direction.

Tensile Strength.

Tensile strength measurements indicate the potential resistance of paper to breaking when subjected to strains during its travel from the roll through the web press mechanism. This test is given only to newsprint. The standard tensile strength specification figures are based upon tests made on a large number of commercial newsprint samples in cooperation with the American Newspaper Publishers Association. These standard values represent the average strength of high grade commercial newsprint products. The specifications require the tests and report to be made separately in each direction of the sheet, both with the grain and across the grain. If the tensile strength falls below these standard figures it is predictable that web breaks may occur during the operation of the press. This is costly in causing delays and necessitating the rethreading of the paper web through the press.

Although this test does not have as broad an appli-

* Presented at the Annual Meeting of the American Pulp and Paper Mill Superintendents Association, Washington, D. C., June 13-15, 1939.

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bursting strength test, it does fulfill a special need in the selection of paper for our web presses such as is used in printing the Congressional Record.

cation to forecasting the strength of paper as the

OPACITY.

Opacity measurements are made by the contrast ratio method. The paper is placed over a white surface of magnesium oxide or magnesium carbonate which gives a total light reflection value due to light reflected from the surface of the paper plus that which is reflected from the white surface underneath. The paper is then backed by a black body such as black felt or velvet, which gives a value due to the light reflected from the surface of the paper only, the transmitted light being absorbed. The latter reflection value divided by the former gives a value known as "contrast ratio."

This determination of the light transmitting quality of the paper is a very important index of the appearance of the final printed sheet. It is possible to predict from this precise measurement of the opacity of a given paper stock whether or not show through will occur when it reaches the presses. Paper which does not come up to the contrast ratio specification cannot be accepted for high grade printing, particularly in which halftones or heavy black areas are involved.

This phenomenon should not be confused, as it sometimes is with a similar appearance of the printing when viewed from the reverse side of the sheet and which is known as strike through. Strike through is caused by too deep a penetration of ink vehicle into the paper fibers and is often a function of the ink properties as well as the absorptability of the paper. This factor may be measured by oil penetration methods.

Opacity is one of the most important properties of printing paper. Any deficiency in this quality which permits the printing to be seen through the sheet, interferes with legibility and is very objectionable.

Not so many rejections are made on this count as upon the cleanliness or general appearance of the paper, which conditions are possibly harder to control at the mill than opacity is. Control measurements of opacity during the manufacture can be quickly and frequently made at the mills with a photoelectric cell and galvanometer type of opacimeter.

THICKNESS.

Thickness is an important factor in the case of all printing papers. Variations in the thickness of book papers affect the uniformity of the printed impression and also cause differences in the bulk of bound books, which is a serious objection, especially in the case of edition printing.

Tabulating card paper must be uniform in thickness in order that the printed cards may fit exactly in the mechanism of the high speed tabulating machines.

Postal cards printed from stock not within the specified limits in thickness do not properly fit the cartons into which they are to be packed. If the postal card paper is too thin the cards will move about loosely in the carton causing injury to themselves during transit. Such cards do not properly engage in the grippers of the automatic banding device at the delivery end of the printing presses and this may cause serious piling up of the cards with consequent delay in production. All rolls of tabulating and postal card stock are individually tested in the Government Printing Office for thickness and those not within the specified limits are rejected. Index paper thicker than that specified is rejected because the cut cards unnecessarily occupy valuable space in filing cabinets. Cards thinner than specified are too flimsy for satisfactory use.

ACIDITY.

Acidity in paper may be caused by the presence of residual chemicals left in the pulp in the process of manufacture, chemicals introduced into the paper in order to obtain certain desired results, as in sizing or acid forming chemicals absorbed from the air or from the skin while being handled.

The result of acidity from whatever source is to cause deterioration of the paper fibers in strength and permanence.

A very accurate analysis for acidity is most important in the case of such papers as rag book, bond, ledger and index intended for use in permanent records. If the subject matter of the printing is regarded as of relatively temporary value, of course, rigid specifications for acidity are not required, but in the case of important records, their longevity is of paramount importance.

Paper acidity is reported in terms of pH values, that is the hydrogen ion concentration, which is a measure of the quantity of active acid in the paper. A pH of 7.0 represents neutrality, that is neither an acid nor alkaline state. The pH values below 7.0 indicate acidity and above that figure alkalinity. Let us illustrate, since we are only concerned with acidity, the quantity of acid increases as the pH numbers decrease. For example, a paper having a pH value of 5.0 is ten times more acid than one having a pH value of 6.0.

During the last fiscal year only 9 rejections were made for not meeting acidity specifications but they represented over a quarter of a million pounds of paper.

It is not appropriate here to discuss the relative merits of rag fibers over certain others with reference to their durability but it is well known that too great an acidity will in all cases lower the resistance and permanency of the stock.

WEIGHT TOLERANCE.

Weight determinations are made on all deliveries of paper for the basis of cost. Payment for roll paper is based on its net weight unless more than 2½ per cent over the ordered 1,000-sheet unit, in which case the weight in excess of 2½ per cent is deducted. Flat paper is paid for at the ordered 1000-sheet unit weight unless more than 2½ per cent under weight, in which case payment is made for net weight. If a delivery of paper is found to be more than 5 per cent above or below the ordered 1,000-sheet or other unit it is rejected.

In case paper is heavier than allowed in the specification the office would receive fewer sheets than would normally be received. If paper is lighter than required by specification more sheets would be received, but such papers would lack opacity, and thickness, thus causing possible trouble in certain types of printing.

It has been previously stated in this paper that weight considerations, sometimes become of importance in basing rejections. This factor has a bearing upon the uniformity of bound volumes and upon the

opacity, other things being equal, since it is associated with thickness.

More than 77 thousand pounds of paper were rejected during the past year on this basis.

EXCESSIVE ROSIN SIZING.

Rosin is detrimental to the life of paper when present in excessive amounts, since it tends to produce discoloration and deterioration of the paper constituents under the action of light. A high rosin content is an index of the amount of alum used since it is usually accompanied by a low pH value due to the presence of free alum in the rosin sizing emulsion. Remembering that a low pH value indicates high acidity, it is clear that this condition should be guarded against during manufacture to protect the paper permanence.

It, therefore, becomes necessary to write this qualification into the specifications of certain types of papers, and careful analysis is made to determine the quantity of rosin present, by extracting the samples with a heated solvent and weighing the solid rosin residue.

There were only three rejections made for this defect during the year, but they totaled about 10,000 pounds.

UNSATISFACTORY GENERAL APPEARANCE.

One of the most objectionable features of paper is an unsatisfactory general appearance due to inclusion of dirt. Microscopic examination of the dirt generally found in paper reveals that it consists chiefly of black mineral and resinous specks, shives or pieces of wood. However, an unsatisfactory general appearance of paper surface may be occasioned by "crush" during the calendering process, to the presence of slime spots, colored fibers or to poor formation. The presence of even minute particles of dirt, scarcely discernible by the eye, destroys the effectiveness of good printing and is particularly degrading to the highlight effects in halftones.

This condition is responsible for by far the largest number of rejections, there having been 38 last year out of 118, representing 816,000 pounds of paper.

UNSATISFACTORY COLOR.

Variation in color and finish of book paper, sulphite writing, bond and ledger papers is not only encountered among shipments from different contractors, but sometimes occurs in the same shipment. The difficulties which arise from variation in color of paper cannot be corrected or allowance made for it in the pressroom. On a long run job it is sometimes necessary to supply the pressroom with paper taken from different shipments. If the color of successive lots of paper differs somewhat during the press run and the ink remains the same, there will be a variation in the tone value of the printed page, since the ink formula and its tonal quality have previously been adjusted to the color of the paper first used. This objection becomes a very strong one when the paper deliveries cannot be segregated to small jobs, but must be used in large edition runs such as the Agricultural Year Book which, in the last issue, numbered a quarter of a million books. It is therefore essential that deliveries comply in color values with the Government Printing Office standard sample in order to obtain uniform results in the pressroom. Six rejections totaling about 172,000 pounds of paper were made for this defect last year.

UNSATISFACTORY FINISH.

Letterpress printing, in its simplest form, is merely the process of transferring ink from metal or other relatively hard surfaces to the softer surfaces of paper. The closer the contact of the inked form, therefore, with the paper surface, the more complete this transfer will be and the better will be the appearance of the work.

Therefore not only does the absorptability but the smoothness of the paper surface affect the coverage or covering power of a given ink on a given paper.

The finish which the papermaker gives to the paper is therefore one of its most important characteristics from the standpoint of the printer since the quality of his work depends largely upon the uniformity.

Printing difficulties arise from paper having different degrees of smoothness of surface finish on the two sides of the same sheet. Variation in this characteristic of paper is responsible for differences in color value of the printed impressions when such sheets are backed up. A rough and absorptive printing surface requires more ink per unit area than a smooth and less absorptive surface to attain a certain degree of color intensity. It is readily comprehended, therefore, that throughout a specific printing job there should be little or no variation in the finish of the two sides of the same paper in order that variations in the tonal values of the finished printing may be avoided.

The smoothness of surface is determined in the Government Printing Office laboratories by means of a Bekk smoothness tester which measures the resistance of the paper to a flow of air, under constant volume and pressure between the paper and a polished glass surface. The higher the resistance to air flow the closer is the contact between the two surfaces and therefore the smoother the paper surface. This is expressed in seconds of time required for a definite drop in a mercury column, measuring the volume of air flow.

This test for smoothness is relatively new in our specifications. It promises to be a dependable index of the printability of certain papers, when closely correlated by observations with press performance under printing.

Ten rejections involving about 310,000 pounds of paper were made last year for unsatisfactory finish. Improvements over previous years, however, has been obtained in the printability on certain stocks due to introducing smoothness requirements into their specifications.

Minor Causes for Rejections

There are several other defects in papers which, although not among the major causes of rejection, have in the past necessitated the rejection of some deliveries made to the Government Printing Office. Among these may be mentioned unsatisfactory writing, ruling and erasing qualities; fluffing, picking of surface coating on the presses, objectionable odor, insufficient or excessive moisture, excessive ash, deficient fiber content and residual chemicals.

We will here touch upon these briefly in their order.

UNSATISFACTORY WRITING QUALITY.

Lack of good writing quality is reported when the ink, delivered from a pen, feathers or spreads into individual fibers beyond the regions of contact.

It has been found on some occasions that paper possessing good writing surface on the felt side of

the sheet permitted feathering of the ink on the wire side of the sheet. This is especially true of machine finished book paper. Many forms such as domestic money order application blanks and treasury decisions printed upon this grade of paper require to be written on with ink, therefore the paper must in such instances be made suitable for this purpose.

Feathering of writing ink is especially guarded against in paper purchased for printing United States postal cards. Here too the wire side shows a greater tendency to feather than the felt side of the paper, for the usual reason of greater absorptability.

Much depends upon the surface sizing. On some occasions the highest grades including 100 per cent rag writing, bond and ledger papers have manifested spreading and feathering of ink on account of slack sizing.

UNSATISFACTORY RULING INK.

Slack sized papers which are unsatisfactory for writing with the usual gallo-tannate inks will in general show feathering or spreading upon the application of ruling inks, which are in most instances aqueous solutions of dyestuffs.

Unsatisfactory ruling is occasionally experienced with papers tubsized with glue of a greasy nature. On account of the greasy character of the tubsizing, which appears to unequally coat the individual fibers, the ruling pen strikes and skips producing broken or discontinuous lines. This may be avoided by using in the tubsizing a glue free from grease and other foreign matter which will interfere with any operation of the ruling machine.

UNSATISFACTORY ERASING QUALITY.

On some occasions it is found necessary to reject high grade bond and ledger papers because the surface of the paper is easily roughened by erasing either with an ordinary rubber or a steel ink eraser. Such papers permit the writing over the erased areas to feather and become illegible. This condition is not permissible in the case of ledger or other papers, the use of which, naturally involves the necessity of erasures, and a few rejections of stock purchased for departmental use have been made for this reason.

UNSATISFACTORY INK ABSORPTION.

The paramount requirement of blotting paper is its capacity to absorb writing ink. A test is given to determine this quality by flowing onto the center of a definite specimen of the blotting paper a measured portion of a standard ink. The average time of several tests required for the complete disappearance of the ink into the paper, is the absorption value of that particular blotting paper. Figures higher than those specified indicate that the paper has low absorptive properties and is therefore of poor blotting quality.

WILD FORMATION.

Wild formation is a term commonly used to describe nonuniformity of sheet structure. This defect in paper requires no special test, but is easily detected by observation.

If fibers are unevenly distributed in the shaking and forming process of the sheet, open or thin spots develop which detract from the opacity. Good printing on such paper becomes almost impossible since there will be uneven show through on the reverse side, producing a mottled appearance when the sheet is backed up with other printing.

There is some tendency for the denser spots where the fibers have clumped together to act as bearers and reduce the printing pressure or squeeze on the thin spots. Where this takes place a "kiss" impression will give mottled printing, some spots being darker than others. To overcome this, the pressure must be increased often to the point of embossing the sheet.

FLUFFING.

One of the most annoying difficulties sometimes experienced in printing is occasioned by the fluffing of fibers loosened from the surface of the paper by friction from handling or left on the ragged edges of sheets cut by dull knives.

These particles rise in the air over the press or are otherwise transported, and settle on the rollers from which they are carried to the printing form or plate and interfere with good printing. They also contaminate the ink by working back into the ink fountains.

Fluffing occurs especially with poorly sized machine finish book papers and soft newsprint. The paper manufacturer could assist in eliminating fluff or paper dust by keeping all knives used in slitting, cutting or trimming sharp and in good condition. Dull cutters tear the fibers free from their matted anchorage along the cut edges producing a frayed effect.

This defect is easily detected and estimated by visual inspection of paper deliveries.

PICKING.

This term is applied to a difficulty encountered during the printing operations when the surface fibers and small areas of the paper lift or pull away from the body of the stock.

Picking produces white spots on the printed areas, thus causing a defective appearance, particularly in dark toned areas and the printed solids. The lifted fibers, like fluff, may adhere to the printing plate or rollers or be carried back through the inking system of the press. This necessitates frequent wash up of the plates and rollers and cleaning of the ink fountains. The presence of the picked fibers causes trouble by clogging the type and filling up the depressed portions of halftone plates.

Picking most frequently occurs on coated paper surfaces. This is due to the fact that the pulling power of the ink overcomes the cohesion of the coating with the base stock. This difficulty, however, is not always due to soft coating on the paper. It may be due to the fact that a highly viscous and too tacky ink was used for the job. In this case the viscosity of the ink must be reduced since the reaction between the printing ink and coated paper depends upon the relative tackiness of the ink and the cohesive property of the coated material.

This problem can also be, to some extent, predicted by a technical test by the application of standardized melted sealing waxes of progressive grades of adhesiveness to the surface of the paper sheet until upon their cooling and removal with pull, the surface breaks, picks or lifts. The number of the wax with which the first break of the surface occurs is taken as the numerical rating of pick.

Such conditions may be avoided by making frequent control tests and giving special attention to surface binding agents and the coating process during manufacture.

OBJECTIONABLE ODOR.

During the summer season it is not uncommon to

receive glue tubsized paper having an objectionable odor. The intensity of the odor depends upon the degree to which the glue has been preserved against decomposition. Although such papers may not present obstacles to press operations, the printer naturally objects to the use of paper possessing an unpleasant odor, and the purchaser of the printed product often will offer a still more serious objection.

EXCESSIVE OR TOO LOW MOISTURE CONTENT.

Troubles in the pressroom such as misregister, curl, and wavy edges due to changes in weather conditions may be largely eliminated when the moisture content of the paper is maintained in equilibrium with the moisture content of the air in the pressroom. Since lithograph-finish map and chart papers are printed under controlled conditions of approximately 50 per cent relative humidity, a requirement for a moisture content in equilibrium with atmospheric moisture at this humidity has been included in the specifications for these papers.

In the recently constructed warehouse of the Government Printing Office, where the United States postal cards are now being printed, an air conditioning system is installed to further assure the best printing conditions for this speedy process, producing 6400 postal card impressions on each of four presses per minute or 384,000 per hour.

EXCESSIVE ASH CONTENT.

The determination for ash indicates the amount of residual minerals in fibrous pulps, loading material, or mineral matter having its origin in dyestuffs and surface coatings used in the manufacturing processes. Excessive ash residue after burning the paper indicates less paper fiber for a given weight of paper, and this is generally accompanied by low paper strength.

DEFICIENT FIBER CONTENT.

The microscopic determination of the stock serves to show the kind of fibers from which a paper is made. It gives some information as to what may be expected in the way of the permanence and durability of the paper. For example, groundwood and unbleached chemical wood fibers are subject to rapid deterioration. Paper containing these fibers becomes yellow and brittle upon exposure and aging. Therefore, the presence of these fibers would be injurious to the serviceability of certain papers designed for permanent records.

The rag content (100, 75, 50, and 25 per cent) papers are made from 100 per cent rag or from various percentages of rag and bleached chemical wood pulp as specified. The presence of even a smal amount of wood fibers in 100 per cent rag papers tends to lower the quality of the paper and other factors being equal to impair its permanence.

Rag fibers are more expensive than wood fibers and any substitution of wood pulp for the rag constitutes an adulteration and results in a cheapening of the sheet.

RESIDUAL CHEMICALS.

Since the deterioration of paper is due in a large measure to oxidation, it must be free from overbleached stock and from impurities such as chlorine, iron, and sulphur. Free chlorine, incompletey washed out after the bleaching process, is detrimental due to the resultant formation of oxycellulose. Ferrous iron in paper accelerates the deteriorating action of rosin and the presence of iron and sulphur dioxide in paper contributes to its deterioration and if found together in the same paper, the detrimental effects on permanence are greater than the sum total of their individual effects would be. The Government Printing Office specifications for permanent papers state that the finished paper must not show the presence of any injurious residual chemicals which will interfere in any way with the permanence of color or the serviceability and durability of paper.

Conclusions

In this paper we have enumerated paper defects which are responsible for the annual rejection of several million pounds of paper by the Government Printing Office. We have attempted to show the significance and the necessity for receiving paper in conformity with prescribed standards, any departure from which may affect its printability, permanence and serviceability or cause interruptions in production. It is worthy of note here that many mills are now maintaining a close technical liaison with printers and paper users to assist in the analysis and correction of their specific problems and if necessary to alter or to create new products to meet their specific needs.

Out of such a comprehensive interest and excellent cooperation must come mutual benefits and a better understanding between papermakers and paper users with resulting advancement in both the raw materials and the finished products of two of the largest and among the most important industries in the world of today.

Review Of Paper Industry Literature

Copies of United States Patents can be obtained from the United States Patent Office, Washington, D. C. for 10 cents each. Send currency, not stamps.

Testing

Report Concerning the DVM Standard Method of Testing. Korn. Papier-Fabr. 36, no. 2: 21-24; no. 3: 29-32 (Jan. 7, 14, 1938).—In standard DIN DVM 3411, the basis weight, the thickness and the volume weight is formulated. In standard DIN DVM 3412, the tensile, bursting and fold tests are formulated. This article concerns the latter and it describes, the measurements of the sample and their effect on the tests; there being no effect of size on the tensile but a considerable effect on the bursting strength. The effect of moisture and temperature on the tests are given, increased moisture increases the fold in most papers except blotting, the bursting strength decreases with moisture and also the tensile. The speed of the tests and also the least number of tests made are discussed. The instruments used are described in conclusion.—J.F.O.

Problem of Practical Gloss Measurements. H. Wolff and G. Zeidler. Paint Varnish Production Mgr. 17, no. 4: 7-13 (1937); C. A. 32:5671.—Experiments with photographic papers (providing black, gray and white surfaces of various degrees of gloss) indicate that there is a close correlation between subjective

gloss and the difference between the specular and diffuse reflectivities. The correlation persists, but is less close, in the case of colored papers, while anomalous results are obtained in the case of metallic foils. —C.J.W .

Strength Testing of Containers. Paul Paris. Papier-Ztg. 63, no. 51: 1035-1036 (June 25, 1938); B. I. P. C. 8:499.—A plant supplied for a number of years folding boxes for lump sugar; although the manufacturers claim that material and processes are always the same, an increasing number of complaints were received that the boxes burst open and no longer stood shipment as they should. Experiments in the tumbling drum of the shipping container laboratory in Altenburg carried out at uniform moisture and temperature clearly indicated that the recent containers were inferior to those previously supplied. No reason is given.—C.J.W.

Machinery

Screening of Chips. Wochbl. Papierfabr. 69, no. 12:262, no. 17:369 (March 19, April 23, 1938); B. I. P. C. 8:429).—The inquirer seeks information with regard to the most economical chip screening system giving the cleanest product. He also wants to know the advantages of the rotary type and flat screen shaker type of screens; and whether still other systems are available. All answers agree that the flat screens are preferable, because they permit a better control, do not get plugged, treat the chips more carefully, and have a higher output. Another system consists of roller screens which can be installed on any strong floor. Their advantages are the same as for flat screens; their output is even higher.—C.J.W.

Cooker for the Preparation of Fibers, Especially Paper Raw Stock. A. Scholz, Coesfeld. Ger. pat. 651,824 April 27, 1935).—The cooker is designed for the preparation of straw, flax and hemp and consists principally of a circulation system built so that the screen does not plug up.—F.J.O.

Digestor for the Manufacture of Pulp and Similar Materials. E. Schauffelberger, Willebrouk. Swed. pat. 89,732 (Jan. 20, 1936).—The invention concerns a digestor in which the material is first pre-treated for the removal of the air, by means of a vacuum pump and the use of warm water to force out the air in the chips.—J.F.O.

Digester Filling Methods. Soltau. Wochbl. Papierfabr. 69, no. 13: 273-76; no. 14: 295-99 (March 26, April 2, 1938).—The author first discusses the advantages of the mechanical filling methods and then describes all the different methods and apparatus. The advantages are increased yield and savings in steam and sulphur. In filling a digestor loosely, the air excluding that in the wood chips takes up 68 per cent of the volume, the air in the chips 20.6 per cent, moisture in the chips 3.2 per cent and wood substance 8.2 per cent. With mechanical filling the amount put in is increased 28 per cent, and figures corresponding to the above are 59, 26.4, 4.1, and 10.5 per cent. The cooking liquor uses up 70 per cent of the steam in loose filling, and there is a saving of 26 per cent with mechanical filling. The first mechanical filler patented was in 1915 and used centrifugal force. The types of filling apparatus can be divided into three groups, filling with the aid of air, with steam and filling by means of a screw or similar mechanical objects. Among the filling devices described are Fresk, Svensson types B and C, Huntemuller, Folin, Castren, Scholz-Frohberg, Lemberger, Zellstoffabrik Waldhof, Christiansen, Bohm, Muller and Fiber Making Processes. A list of patents concludes the article.—J.F.O.

Straw Board Machine. Wochbl. Papierfabr. 69, no. 15:327; no. 20:431 (April 9, May 14, 1938); B. I. P. C. 8:426.—A straw board mill with one Fourdrinier machine has a considerable difference in the output between summer and winter. The mill uses river water and is anxious to know by what means this difference can be balanced. The difference in the river water temperature in summer and winter is given as the main reason of decrease in production during the cold season. The best remedies are as complete white water utilisation as possible, so that stock temperatures upon the wire are kept higher, and eventual increase of the dryer section through additional drying cylinders. The most efficient means depend to a large extent upon local conditions.—C.J.W.

Fourdrinier Wires. Wochbl. Papierfabr. 69, no. 10:211; no. 13: 280-281 (March 5, 26, 1938); B. I. P. C. 8:430.—The inquirer asks how the life period of Fourdrinier wires can be prolonged, especially with regard to the most suitable material for the suction box covers. Medium fine writing and printing paper is made on the machine in question. All answers agree that the life of Fourdrinier wires is not only affected by the suction box covers, although they play a very important part, but also by a number of other factors, such as great care when changing the wire, correct tension, that all rolls run perfectly straight and turn easily in their ball bearings, so that no unnecessary drag is put on the wire, that the wet part is sufficiently large for the type and weight of paper made, etc. With regard to the suction box covers, the answers suggest various materials as satisfactory for the purpose, such as different kinds of wood, leather, chromium plated brass or steel, etc. It is very important that the wires do not cut grooves into the box cover material, which tendency may be greatly reduced by having the wires move sideways for about ½ cm. The addition of another suction box will often relieve the too heavy suction of the first boxes. Where this is not possible it may help to make the existing boxes narrower in order to reduce the strain on the wire.—C.J.W.

Careful Treatment of the Felts in the Board Machines. Pappen-u. Holzstoff-Ztg. 45, no. 22:240 (June 3, 1938); B. I. P. C. 8:428.—The inquirer asks for the outside temperatures of drying cylinders corresponding to heating under a pressure of 0.4, 0.6, 0.8, 1, 1.2, 1.5, and 2 atmospheres. The following temperatures are given for the inside of the cylinders: 109, 113, 117, 120, 123, 127, 133° C. These temperatures are never reached on the outside and depend on a large number of individual factors; they vary also with kind of steam, and whether saturated or superheated steam is employed. The application of a surface pyrometer is suggested, and reference is made to data in volume IIA by Friedrich Müller, "Die Papierfabrikation und deren Maschinen."—C.J.W.

Felt-Conditioning Device for Paper Machines. Frederick W. Vickery and Louis S. Johnson. Brit. pat. 478,713 (Jan. 24, 1938.—In a felt conditioner for paper making and like machines, the operation of the conditioner unit that applies a conditioning fluid to the felt and withdraws it by suction is substantially confined to its traverse in one direction only so that the conditioning operations are evenly timed.—A.P.-C.

Imports of Paper and Paper Stock

Giving Manifests of New York, Boston, Philadelphia and Other Ports of Newsprint, Wrapping, Writing, Coated, Blotting, Tissue, Strawboard, Wallboard, Cigarette Papers, Sulphite, Kraft and Ground Wood Pulp.

NEW YORK IMPORTS

WEEK ENDING JUNE 24, 1939

SUMMARY

Cigarette Paper.....31 cs.
Wall paper .....2 bls., 13 cs.
Newsprint.....15,903 rolls
Printing paper.....27 cs.
Wrapping paper.....731 rolls, 30 bls.
Drawing paper.....6 cs.
Filter paper.....15 cs.
Filter compound.....25 bls.
Surface coated paper.....116 cs.
Photo paper.....9 cs.
Decalcomanias .....13 cs.
Decalcomania paper.....65 cs.
Transfer paper.....17 cs.
Tissue paper.....5 cs.
Writing paper.....8 cs.
Colored paper.....4 cs.
Miscellaneous paper.....64 rolls, 16 bls., 43 cs.

CIGARETTE PAPER

A. H. White, *Ile de France,* Havre, 2 cs.
Braunstein Freres, Inc., *Ile de France,* Havre, 11 cs.
H. H. Strauss, *Indep. Hall* Bordeaux, 17 cs.
Champagne Paper Corp., *Manhattan,* Havre, 1 cs.

WALL PAPER

D. C. Andrews & Co., *Brittannic,* Southampton, 1 cs.
Titan Shipping Co., *Bergensfjord,* Hagastrom, 3 cs.
———, *Europa,* Bremen, 1 cs.
C. Asche, *Black Gull,* Antwerp, 1 cs., 2 bls.
F. Blank, & Co., *Manhattan,* Havre, 7 cs.

NEWSPRINT

H. G. Craig Co., *Donpaco,* Donnacona, 371 rolls.
J Madden Corp., *Pr. Roosevelt,* Finland, 371 rolls.
———, *Bergensfjord,* Oslo, 306 rolls.
———, *Bergensfjord,* Skien, 84 rolls.
Pagel Horton & Co., Inc., *Bergensfjord,* Skien, 467 rolls.
Jay Madden Corp., *Astrid Thorden,* Kotka, 75 rolls.
N. Y. Evening Journal, *Markland,* Liverpool, N.S., 622 rolls.
N. Y. Tribune, Inc., *Markland,* Liverpool, N.S., 1,364 rolls.
World Telegram, *Markland,* Liverpool, N.S., 589 rolls.
Brooklyn Daily Eagle, *Markland,* Liverpool, N.S., 468 rolls.
News Syndicate Co., Inc., *Brand,* Comeau Bay, 7,554 rolls.
H. G. Craig Co., *G.D.D.,* Donnacona, 394 rolls.
International Paper Co., *International #1,* Gatineau, 310 rolls.
———, *Ravnaas,* Port Alfred, 1,041 rolls.
H. G. Craig Co., *Newscarrier,* Donnacona, 339 rolls.
Jay Madden Corp., *Scanmail,* Kotka, 484 rolls.
International Paper Co., *G.T.D.,* Gatineau, 363 rolls.
Jay Madden Corp., *Manhattan,* Finland, 257 rolls.
Perkins Goodwin & Co., *Hamburg,* Hamburg, 322 rolls.
Jay Madden Corp., *Hamburg,* Finland, 122 rolls.

PRINTING PAPER

F. L. Kramer & Co., *American Trader,* London, 1 cs.
N. Y. World's Fair, *Alex van Opstal,* Antwerp, 7cs.
Senefelder Co., *Hamburg,* Hamburg, 19 cs.

WRAPPING PAPER

———, *Astrid Thorden,* Mantyluoto, 731 rolls, 30 bls.

DRAWING PAPER

H. Reeve Angel & Co., Inc., *Britannic,* London, 5 cs.
Devoe & Raynolds Co., *Pr. Roosevelt,* Havre, 1 cs.

FILTER PAPER

H. Reeve Angel & Co., Inc., *Britannic,* London, 14 cs.
Heemsoth Kerner Corp., *Pr. Roosevelt,* Havre, 1 cs.

FILTER COMPOUND

———, *Pr. Roosevelt,* Hamburg, 25 bls.

SURFACE COATED PAPER

Gevaert Co., of America, *Black Gull,* Antwerp, 27 cs.
Gevaert Co., of America, *Westernland,* Antwerp, 89 cs.

PHOTO PAPER

Medo Photo-Supply Co., *Queen Mary,* Southampton, 2 cs.
J. J. Gavin Co., *Manhattan,* Southampton, 7 cs.

DECALCOMANIAS

Sellers Transportation Co., *Europa,* Bremen, 3 cs.
General Motors Overseas Operations, *Europa,* Bremen, 10 cs.

DECALCOMANIA PAPER

B. F. Drakenfeld & Co., *Scythia,* Liverpool, 50 cs., (duplex), 15 cs., (simplex).

TRANSFER PAPER

Dingelstedt & Co., *Hamburg,* Hamburg, 17 cs.

TISSUE PAPER

F. C. Strype, *Scythia,* Liverpool, 5 cs.

WRITING PAPER

Distinctive Writing Paper Co., *Britannic,* Southampton, 3 cs.
H. W. Robinson Co., *Queen Mary,* Southampton, 5 cs., (and envelopes).

COLORED PAPER

J. W. Hampton, Jr. & Co., *Black Gull,* Antwerp, 4 cs.

MISCELLANEOUS PAPER

Winsor Newton, Inc., *Britannic,* Lindon, 3 cs.
———, *Bergensfjord,* Oslo, 64 rolls, 16 bls.
Horman Schutte & Co., Inc., *Excalibur,* Genoa, 19 cs.
W. J. Byrnes & Co., *Ile de France,* Havre, 2 cs.
Tricolator Co., *Komaki Maru,* Kobe, 10 cs.
H. Reeve Angel & Co., Inc., *Komaki Maru,* Yokohama, 9 cs.

RAGS, BAGGINGS, ETC.

Manufacturers Trust Co., *Tasmania,* Bombay, 100 bls. cotton waste.
J. Levy & Son, *Porto Rico,* Havana, 17 bls. rags.
———, *Borkum,* Buenos Ayres, 209 bls. bagging.
Continental Bank Trust Co., *Quaker City,* Dundee, 138 bls. paper stock.
———, *Quaker City,* Dundee, 72 bls. paper stock.
Castle & Overton, Inc., *Quaker City,* Dundee, 44 bls. paper stock.
W. Steck & Co., *Excalibur,* Alexandria, 205 bls. bagging.
R. Blank, *Excalibur,* Alexandria, 59 bls. rags, 224 bls. colored cottons.
D. S. Stern Corp., *Pr. van Buren,* Bombay, 100 bls. cotton waste.
———, *Helvig,* London, 10 bls. rags.
———, *Scythia,* Liverpool, 70 bls. rags.
Public National Bank Trust Co., *Scythia,* Liverpool, 10 bls. rags.
Manufacturers Trust Co., *Scythia,* Liverpool, 89 bls. rags, 2 bls. thread waste.
Chase National Bank, *Scythia,* Liverpool, 2,260 bdls. bagging.
Manufacturers Trust Co., *Noordam,* Rotterdam, 130 bls. bagging.
———, *Black Gull,* Rotterdam, 53 bls. rags.
———, *Indep. Hall,* Bordeaux, 21 bls. rags.
———, *Indep. Hall,* Havre, 207 bls. rags.
E. J. Keller Co., Inc., *Indep. Hall,* ———, 43 bls. rags.
W. J. Green & Co., *Indep. Hall,* Havre, 19 bls. rags.
Atlas Waste Manfg. Co., *Black Falcon,* Rotterdam, 14 bls. bag scrap.
———, *Examelia,* Sfax, 11 bls. rags.
R. & V. Miller, Inc., *Scanmail,* Copenhagen, 9 bls. rags.

CHINA CLAY

———, *Black Falcon,* Rotterdam, 160 bags.

WOOD PULP

The Borregaard Co., Inc., *Bergensfjord,* Sarpsborg, 150 bls. unbleached sulphite, 804 bls. unbleached sulphate.
E. M. Sergeant Pulp & Chemical Co., *Bergensfjord,* Nygard, 125 bls. dry chemical pulp.

Chase National Bank, *Bergensfjord*, Oslo, 150 bls. bleached sulphite.
Pulp Sales Corp., *Astrid Thorden*, Viipuri, 2350 bls. sulphite.
———, *Karin Thorden*, Hernosand, 3,500 bls. sulphite, 540 tons.
J Anderson & Co., *Karin Thorden*, Sundsvall, 1200 bls. kraft sulphate, 200 tons.
Pulp Sales Corp., *Scanmail*, Kotka, 2,100 bls. sulphate, 420 tons.

WOOD PULP BOARDS

Jay Madden Corp., *Astrid Thorden*, Viipuri, 115 ctns.

ALBANY IMPORTS

WEEK ENDING JUNE 24, 1939

Pulp Sales Corp., *Astrid Thorden*, Viipuri, 3,970 bls. sulphate, 829 bls. sulphite.
Pulp Sales Corp., *Astrid Thorden*, Kotka, 308 bls. sulphate, 34 bls. sulphite.
———, *Karin Thorden*, Kalix, 2,750 bls. chemical pulp, 550 tons.

BOSTON IMPORTS

WEEK ENDING JUNE 24, 1939

Gottesman & Co., Inc., *Bockenheim*, Sweden, 900 bls. wood pulp.
Castle & Overton, Inc., *Borkum*, Buenos Ayres, 280 bls. old dark cottons.
———, *Quaker City*, Dundee, 102 bags blue stock.
Pagel Horton & Co., Inc., *Bockenheim*, Sweden, 500 bls. wood pulp.
M. Sone, *Ragnhildsholm*, Stockholm, 300 bls. wood pulp.
Price & Pierce, Ltd., *Bockenheim*, ———, 1,800 bls. unbleached sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING JUNE 24, 1939

Castle & Overton, Inc., *Borkum*, Buenos Ayres, 43 bls. old cottons.
———, *Quaker City*, Dundee, 185 bls. paperstock.
———, *Quaker City*, Hamburg, 90 rolls wrapping paper.
Manufacturers Trust Co., *Helvig*, Rotterdam, 93 bls. waste.
J. M. Hagy Waste Works, *Helvig*, Antwerp, 46 bls. rags.
Castle & Overton, Inc., *Indep. Hall*, Havre, 97 bls. rags.
J. M. Morris Co., *Indep. Hall*, Havre, 12 cs. filter paper.
Darmstadt Scott & Courtney, *Black Falcon*, Antwerp, 59 bls. bagging.
M. Sone, *Karin Thorden*, Soderhamn, 2,500 bls. mechanical pulp, 500 tons.
———, *Karin Thorden*, Hernosand, 1,100 bls. sulphite, 180 tons.
Mead Sales Co., Inc., *Karin Thorden*, Sundsvall, 1,650 bls. sulphite, 275 tons.
Cellulose Sales Co., Inc., *Karin Thorden*, Sundsvall, 300 bls. sulphite, 60 tons; 210 bls. kraft sulphate, 35 tons.
Public Ledger, Inc., *Scanmail*, Kotka, 592 rolls newsprint.
Price & Pierce, Ltd., *Scanyork*, ———, 180 bls. bleached sulphite.
Price & Pierce, Ltd., *Toronto*, ———, 725 bls. bleached sulphite.

WILMINGTON IMPORTS

WEEK ENDING JUNE 24, 1939

Pulp Sales Corp., *Astrid Thorden*, Viipuri, 2,250 bls. sulphite.
Jay Madden Corp., *Astrid Thorden*, Kotka, 1,350 rolls wood pulp boards.
Pulp Sales Corp., *Astrid Thorden*, Kotka, 175 bls. sulphate.

BALTIMORE IMPORTS

WEEK ENDING JUNE 24, 1939

Pulp Sales Corp., *Astrid Thorden*, Mantypuoto, 2,325 bls. mechanically ground pulp.
Washington Post, *Markland*, Liverpool, N.S., 2,454 rolls newsprint.
Congoleum Nairn Co., *Indep. Hall*, Bordeaux, 1,014 bls. rags.
Congoleum Nairn Co., *Indep. Hall*, St. Nazaire, 129 bls. rags.
Congoleum Nairn Co., *Indep. Hall*, Havre, 494 bls. rags.
Jay Madden Corp., *Scanmail*, Kotka, 826 rolls newsprint.
Pulp Sales Corp., *Scanmail*, Kotka, 1,400 bls. sulphite, 233 tons.
Pagel Horton & Co., Inc., *Wanja*, Sweden, 1,500 bls. wood pulp.
Price & Pierce, Ltd., *Scanyork*, ———, 210 bls. bleached sulphite.
Price & Pierce, Ltd., *Wanja*, ———, 1,890 bls. unbleached sulphite.
Parsons & Whittemore, Inc., *Toronto*, ———, 350 bls. wood pulp.

NEWPORT NEWS IMPORTS

WEEK ENDING JUNE 24, 1939

De Mauduit Paper Corp., *Indep. Hall*, Havre, 641 cs. cigarette paper.
Price & Pierce, Ltd., *Wanja*, ———, 450 bls. unbleached sulphite.

NORFOLK IMPORTS

WEEK ENDING JUNE 24, 1939

Gottesman & Co., Inc., *Wanja*, Sweden, 3,950 bls. wood pulp.
Pulp Sales Corp., *Scanmail*, Kotka, 1,605 bls. wood pulp, 321 tons; 1,020 bls. sulphite, 188 tons; 2,174 bls. sulphate, 404 tons.
W. H. Stone & Co., *Scanmail*, Kotka, 156 rolls, 241 bls. newsprint.
Old Dominion Paper Co., *Scanmail*, Kotka, 70 rolls 27 bls. newsprint.
———, *Quaker City*, Hamburg, 472 rolls paper, 112 rolls newsprint.
H. H. Strauss, *Indep. Hall*, Bordeaux, 149 cs. cigarette paper.
American Tobacco Co., *Indep. Hall*, Bordeaux, 475 cs. cigarette paper.
R. J. Reynolds Tobacco Co., *Indep. Hall*, St. Nazaire, 1728 cs. cigarette paper.
Champagne Paper Corp., *Indep. Hall*, Havre, 139 cs. cigarette paper.

NEW ORLEANS IMPORTS

WEEK ENDING JUNE 24, 1939

Continental Bank Trust Co., *Alberta*, Algiers, 150 bls. rags.

Occupies New Store at Jacksonville

JACKSONVILLE, Fla., June 24, 1939—The Virginia Paper Company is occupying its new home at 509 East Eighth street, between Ionia Street and railroad.

The building is a two-story brick structure, equipped throughout with automatic sprinkler system. On the west side of the building is a vacant lot, to be utilized for automobile parking space.

Prior to purchasing this property about three months ago the officials of the company made a thorough survey of the city before selecting this site where they found it would be convenient for its business and having adequate space in storing the large amount of merchandise stocked.

The rapid development of the city was one of the reasons that induce the officials to invest in property in Jacksonville.

Stuart H. Richeson is vice-president of the firm and was reared and educated in this city.

The company was founded in Richmond, Va., January, 1914, and early this year celebrated its silver anniversary of 25 years in business. The company has progressed rapidly since its founding and has secured branch warehouses in Washington, Charlotte and Jacksonville. The main office of the company is maintained in Richmond.

The Virginia Paper Company is well known in the Southeast, having furnished printers, stationers and publishers with a complete line of newsprint and printing paper for many years. Jacksonville is the headquarters for this division and the territory covered by this branch includes from Key West to Atlanta and portions of Alabama and South Carolina.

A. P. & P. Files Wage Protest

The American Paper and Pulp Association filed protests on June 28 and 29 with the Public Contracts Division of the United States Department of Labor at Washington, on the wage recommendations of the Public Contracts Board.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, June 28, 1939.

Wholesale trade in the paper market continues at a good level during the current week, according to reports received from many manufacturers' representatives, jobbers, and general paper merchants. The trend of business activity in general is upward and an increase in volume has been reported in some major industries and commodities.

Although general business activity was irregular during the month of May, the principal trade indicators show a sharp upward trend since the first of June. The index of general business activity for the week ended June 17, rose to 90.6, from 89.8 for the previous week and compared with 76.9 per cent for the corresponding period last year.

Paper production as indicated by 208 domestic mills for the week ended June 17, was estimated at 75.0 per cent, compared with 66.1 per cent for the like period last year, and with 71.0 per cent for the corresponding week in 1937.

Consumption of newsprint continues to improve slowly and is reported for the current week to be at substantially the same level as for the corresponding week last year. It is reported on good authority that the French Government has made an allottment equivalent to $6 per short ton on newsprint. The tonnage involved is said to be small.

Newspaper advertising linage in millions of lines rose to 112.4 in May of this year, from 111.1 in April and compared with the low of the current year of 86.7 in February. The index of radio advertising was 15.5 per cent above May of last year and 14.2 per cent higher than in April.

Wholesale sale of many grades of paper are reported at a good to moderately good level this week, with sales volume on a relatively few grades reported as fair. Prices in general are firm and no changes from prevailing representative market quotations have been reported to date. Demand for paper board continues good and prices are relatively firm on all grades, with some reports of slightly lower quotations than representative market prices being quoted on large orders on chip and news in the metropolitan area.

Mechanical Pulp

A seasonal lull in demand is reported in some quarters of the trade on mechanical pulp this week. Prices are a little lower and the No. 1 imported grade, moist and dry, is currently quoted at from $22.50 to $24 per ton, on dock, Atlantic Ports. No. 1 domestic and Canadian is currently quoted at from $28 to $32 per ton, delivered.

Chemical Pulp

Demand for chemical pulp is reported as falling off a little at this date, with prices on some grades a little lower. Imported strong unbleached sulphite is currently quoted at 1.75 to 1.90, on docks; kraft, light and strong, at from 1.50 to 1.60; kraft No. 1, at from 1.40 to 1.50; and kraft No. 2 at from 1.25 to 1.30 per pound or per cwt.

Old Rope and Bagging

Trading in old rope continues very light and this market is quiet. Prices remain unchanged at prevailing quotations. The old bagging market is quiet and prices are practically nominal.

Rags

Demand for paper making rags is reported as rather light at this date, with new white No. 1 shirt cuttings currently quoted at from 6.65 to 6.90. No change in the prices of other grades of new and old rags has been reported this week.

Old Waste Paper

While more firmness is reported in some grades of old waste paper, due mainly to diminished supply and notably in old corrugated, no important change in prices has been reported.

Twine

Somewhat less activity in the twine market is reported this week. Prices are fairly firm and no change in the representative market quotations on any grade of hard or soft fiber twine has been reported for the current week.

Germany's Paper Exports To U. S. Drop

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., June 27, 1939—United States purchases of paper and paperboard from Germany appreciably decreased during 1938 compared with 1937, according to a report from the American consulate at Cologne made public by the Department of Commerce.

Official German trade statistics show that exports of paper and paperboard from Germany to the United States decreased from 16,230 tons, valued at $1,452,000, in 1937 to 12,101 tons, valued at $1,172,270, in 1938.

Shipments of paper goods to the United States decreased 34 per cent during the same period, or from 3,157 tons, valued at $3,156,500, in 1937 to 2,067 tons, valued at $2,390,000, in 1938.

Aggregate German exports of paper and paper products in 1938 amounted to 345,745 metric tons, valued at 157,926,000 marks (approximately $63,423,000), a decrease of 35 per cent in volume and 27 per cent in value compared with 1937.

The sharp decrease in the paper export trade of Germany in 1938 was due to slow demand in world markets coupled with a wide-spread refusal to purchase goods of German origin, the report said.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, June 28, 1939.

BLANC FIXE—Prices on blanc fixe continue firm and unchanged at prevailing market quotations. The pulp is quoted at from $42.50 to $45 per ton, in bulk; the powder is offered at from 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER—Quotations on bleaching powder remain firm and conform to prevailing market prices. Bleaching powder is currently quoted at from $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN—Quotations on casein continue firm under a good demand and are unchanged for the week. Standard domestic casein, 20-30 mesh, is quoted at from 8¾ to 9¼ cents per pound; 80-100 mesh, at from 9¼ to 9¾ cents per pound; all prices in bags, car lot quantities.

CAUSTIC SODA—Prices on caustic soda continue firm and unchanged at prevailing market quotations. Solid caustic soda is quoted at from $2.10 to $2.30 per 100 pounds; flake and ground at from $2.50 to $2.70 per 100 pounds, in drums, at works.

CHINA CLAY—Quotations on china clay continue firm and remain unchanged at prevailing market levels. Domestic filler clay is quoted at from $6.50 to $12 per ton; coating clay at from $11 to $22 per ton, at mines. Imported clay is offered at from $13 to $25 per ton, ship side.

CHLORINE—Prices on chlorine continue firm and conform to prevailing market quotations. Chlorine is currently quoted at $1.75 per 100 pounds, in single-unit tank cars, f.o.b., works.

ROSIN—The rosin market is reported as firm for the current week. Prices are a little lower on some grades, "G" gum rosin is currently quoted at $4.70; "FF" wood rosin at $4.50, per 280 pounds, gross weight in barrels, at Savannah. Seventy per cent gum rosin size is offered at $2.66 per 100 pounds, f.o.b., shipping point.

SALT CAKE—Prices on salt cake continue firm and unchanged at prevailing market quotations. Prices range at from $12 to $13.50 per ton; chrome salt cake at from $11 to $12 per ton, f.o.b., shipping point. Imported salt cake is quoted at from $14.50 to $15 per ton, Gulf or Atlantic Seaboard, on dock.

SODA ASH—Quotations on soda ash continue firm and unchanged at prevailing market levels. Prices on soda ash in car lots, at works, per 100 pounds, are as follows; in bulk, $.90; in bags, $1.05; and in barrels, $1.35.

STARCH—The corn starch market is relatively firm under a good demand. Globe pearl is currently quoted at $2.55 per 100 pounds; special paper starch at $2.64 per 100 pounds. All prices in bags, car lot quantities, f.o.b., Chicago.

SULPHATE OF ALUMINA—Quotations on sulphate of alumina continue firm and unchanged at prevailing market levels. The commercial grades are offered at $1.15; iron free at $1.30 per 100 pounds, in bags, car lot quantities, f.o.b., works.

SULPHUR—Prices on sulphur continue firm and unchanged at prevailing market levels under a good demand. Annual contracts are quoted at $16 per long ton, f.o.b., mines. Spot and nearby car lots are offered at $19 per ton.

TALC—The demand for talc continues good for the week. Quotations are firm and conform to prevailing market levels. Domestic talc is currently quoted at from $15 to $18 per ton, Eastern mines. Imported talc is offered at from $20 to $40 per ton, on dock.

Market Quotations

Paper

(Delivered New York)

News, per ton—			
Roll, contract	$50.00	@	—
Sheets	58.00	@	—
Kraft—per cwt.—Delivered Zone A			
No. 1 Northern	$4.75	@	$5.25
Superstandard	4.12½	@	4.62½
Northern Standard Wrapping	4.00	@	—
Standard Wrapping	3.50	@	—
Tissues—Per Ream—Carlots			
White No. 1	$0.82½	@	—
White No. 1 M. G.	.80	@	—
White No. 1½	.67½	@	—
White No. 2	.60	@	—
Anti-Tarnish M. G.	.65	@	—
Colored	.77½	@	—
Kraft	.65	@	—
Manila	.60	@	—
Unbl. Toilet, 1 M.	2.65	@	—
Bleached Toilet	5.26	@	—
Paper Towels—Per Case			
Unbleached, Jr.	$1.75	@	—
Bleached Jr.	3.10	@	—
Manila—per cwt.—C. l. f. a.			
No. 1 Jute	7.75	@	9.75
No. 1 Manila Wrapping, 35 lb.	5.00	@	—
No. 2 Manila Wrapping, 35 lb.	4.75	@	—
Boards, per ton—			
News	30.00	@	32.50
Chip	30.00	@	32.50
Sgl. Mla. Lt. Chip	42.50	@	—
Jute Lined Chip	42.50	@	45.00
White Pat. Coated	55.00	@	57.50
Kraft Liners	45.00	@	—
Binders Boards	71.00	@	77.00

The following are representative of distributors' resale prices:

Rag Content Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
100% Rag Ext. No. 1	$39.10	@ $46.00	$40.25	@ $47.25
100% Rag	31.05	@ 36.50	32.20	@ 37.75
85% Rag	.....		29.90	@ 35.00
75% Rag	23.60	@ 27.75	24.75	@ 29.00
65% Rag	.....		31.65	@ 26.25
50% Rag	17.55	@ 21.50	18.70	@ 22.75
25% Rag	14.65	@ 17.75	15.80	@ 19.25

Colors at $1.00 cwt. extra.

Sulphite Bonds and Ledgers—White, Assorted Items, Delivered in Zone 1:

	Bonds		Ledgers	
No. 1	$8.60	@ $10.50	$9.75	@ $12.00
No. 2	7.70	@ 9.50	8.90	@ 10.75
No. 3	6.75	@ 8.25	7.90	@ 10.00
No. 4	7.00	@ 8.50	8.20	@ 10.00

Colors $1.00 cwt. extra.

Free Sheet Book Papers—White, Cased Paper, Delivered in Zone 1:

No. 1 Glossy Coated	$11.30	@	$12.75
No. 2 Glossy Coated	9.70	@	11.00
No. 3 Glossy Coated	8.60	@	10.00
No. 4 Glossy Coated	8.05	@	9.25
No. 1 Antique (watermarked)	8.05	@	9.25
No. 2 Offset	7.45	@	8.50
A Grade E. F.	7.20	@	8.25
A Grade S. & S. C.	7.45	@	8.50
B Grade E. F.	6.65	@	7.75
B Grade S. & S. C.	6.90	@	8.00
C Grade E. F.	6.40	@	7.50
C Grade S. & S. C.	6.65	@	7.75
D Grade E. F.	6.10	@	7.00
D Grade S. & S. C.	6.35	@	7.25

Ivory & India at $.50 cwt. extra.

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—			
Moist	22.50	@	24.00
Dry	22.50	@	24.00
(Delivered)			
No. 1 Domestic and Canadian	29.00	@	31.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—			
Prime Bleached Sulphite	2.25	@	2.75
Prime Qualities—			
Easy-Bleaching Sulphite	1.90	@	2.00
Strong Unbleached Sulphite	1.70	@	1.90
(On Dock, Atlantic Ports)			
Kraft Bleached	2.50	@	2.75
Kraft Light & Strong	1.50	@	1.60
Kraft No. 1	1.40	@	1.50
Kraft No. 2	1.25	@	1.30
(F. o. b. Pulp Mill)			
Kraft Domestic	1.25	@	1.75
(Delivered)			
Soda Bleached	2.55	@	—

Add 60 cents per short ton, dock charges for Albany; $2.50 for Lake Ports East and $3.50 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—			
New White, No. 1	6.65	@	6.90
Silesias No. 1	4.50	@	4.75
New Unbleached	6.75	@	7.00
Blue Overall	4.90	@	5.00
Fancy	1.75	@	2.00
Washables	1.50	@	1.60
Mixed Khaki Cuttings	2.25	@	2.50
O. D. Khaki Cuttings	3.25	@	3.40

Old Rags

White, No. 1—			
Repacked	2.90	@	3.11
Miscellaneous	2.10	@	2.25
White, No. 2—			
Repacked	1.50	@	1.60
Miscellaneous	1.25	@	1.40
Thirds and Blues—			
Repacked	1.30	@	1.40
Miscellaneous	1.15	@	1.20
Roofing Rags—			
No. 1	.85	@	.95
No. 2	.67½	@	.77½
No. 3 (bagging)	.55	@	.65
No. 4	.60	@	.65
No. 5A	.60	@	.65

Foreign Rags

New Rags

New Dark Cuttings	2.25	@	2.40
New Mixed Cuttings	2.00	@	2.20
New Light Silesias	5.50	@	5.75
Light Flannelettes	5.50	@	5.75
New White Cuttings	7.00	@	7.25
New Light Oxford	4.00	@	4.25
New Light Prints	3.00	@	3.25

Old Rags

No. 1 White Linens	7.50	@	8.50
No. 2 White Linens	6.50	@	7.50
No. 3 White Linens	4.50	@	—

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WEB PRINTING
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Whether it's a roll of bread wrap 80" wide—a web of cement bag paper 40" wide—or a roll of tape 2" wide . . . there is a POTDEVIN press to print it.

Presses supplied to print aniline, oil-ink, rotogravure or combinations of these—from one to 8 colors.

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18 hours a week in Plant B
24 hours a week in Plant C

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The fear of the future evidence everywhere seems to be emphatically lacking at Potdevin. Their Plant 1, 1223 38th St., Brooklyn, N. Y., is booked solid with sold work for almost the rest of the year.

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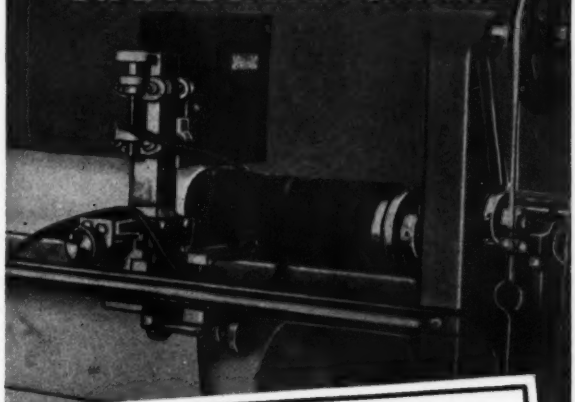

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. . . .

KRAFT WRAPPING AND KRAFT ENVELOPE
KRAFT CYLINDER BOARD
BLEACHED SULPHITE AND SODA PULP
BLEACHED AND UNBLEACHED KRAFT PULP

MILLS:

Mechanicville, New York
Luke, Maryland
Covington, Virginia
Tyrone, Pennsylvania
Williamsburg, Pennsylvania
Cass, West Virginia
Charleston, South Carolina

No. 4 White Linens.	2.25	@	3.25
No. 1 White Cotton.	4.25	@	4.75
No. 2 White Cotton.	3.25	@	3.75
No. 3 White Cotton.	2.50	@	3.00
No. 4 White Cotton.	1.90	@	2.20
Extra Light Prints..	2.00	@	2.40
Ord. Light Prints...	1.75	@	2.15
Med. Light Prints...	1.55	@	1.95
Dutch Blue Cottons.	2.25	@	2.50
French Blue Linens..	3.00	@	—
Checks and Blues...	2.00	@	—
Linsey Garments....	1.90	@	2.00
Dark Cottons.....	1.50	@	1.60
Old Shopperies.....	1.30	@	1.45
New Shopperies.....	1.45	@	1.50
French Blues.....	2.25	@	2.50

Old Rope and Bagging

(Prices to Mill, f. o. b. N. Y.)

Gunny No. 1—			
Foreign	1.75	@	1.90
Domestic	1.75	@	1.80
Wool Tares, light...	1.60	@	1.70
Wool Tares, heavy..	1.80	@	1.90
Bright Bagging.....	1.60	@	1.70
Manila Rope—			
Foreign	2.60	@	2.75
Domestic	2.75	@	3.00
Jute Threads.....	3.00	@	3.25
Sisal Strings	1.50	@	1.60
Mixed Strings....	.55	@	.60

Old Waste Papers

(F. o. b. New York)

Shavings—			
White Envelope Cuttings	2.30	@	2.40
Ordinary Hard White No. 1....	1.90	@	2.00
Soft White No. 1..	1.60	@	1.75
Soft White Extra..	2.25	@	2.40
Flat Stock—			
Stitchless	.80	@	.85
Overissue Mag	.70	@	.75
Solid Flat Book....	.55	@	.60
Crumbled No. 1....	.40	@	.45
Ledger Stock White.	1.05	@	1.15
Ledger Stock Colored	.60	@	.70
New B. B. Chips....	.15	@	.20
Manila—			
New Env. Cut....	1.40	@	1.50
New Cuttings.....	1.00	@	1.20
Old Kraft Machine—			
Compressed bales..	.60	@	.65
News—			
No. 1 White News	1.25	@	1.30
Strictly Overissue.	.40	@	.45
Strictly Folded....	.27½	@	.32½
No. 1 Mixed Paper..	.17½	@	.22½

Twines

(F. o. b. Mill)
(Soft Fiber)

Coarse Polished—			
India	.12¾	@	.14¼
White Hemp.....	.13¾	@	.15¼
Fine Polished—			
Fine India.....	.16	@	.18
Unpolished—			
Box	.09½	@	—
Paper Makers.....	.09½	@	.10½
Tube Rope.....	.10¼	@	.12½
Wall Paper.....	.10¼	@	.12½
Wrapping	.12	@	—
Soft Fiber Rope...	.12	@	.14
Cotton	.16	@	.19
(Hard Fiber)			
Medium Java.....	.11	lb	.17
Mex. Sisal.....	.10	@	.16
Manila	.16	@	.23

PHILADELPHIA

Domestic Rags (New)

(Price to Mill, f. o. b. Phil.)

Shirt Cuttings—			
New White, No. 1.	.06	@	.06½
New White, No. 2.	.03½	@	.04
Light Silesias.....	.03½	@	.04
Silesias, No. 1....	—	@	.04½
Black Silesias, soft	—	@	.03
New Unbleached..	.05½	@	.06
Washable, No. 1..	.01½	@	.01¾
Blue Overall.....	.04	@	.04½
Cottons—According to grades—			
Washable No. 2...	.01	@	.01¾
New Blue.....	.01	@	.01¾
Fancy Percales...	—	@	.02½
New Black Soft...	.03	@	.03½
New Light Seconds	—	@	.04½
New Dark Seconds	.50	@	.75
Khaki Cuttings—			
No. 1 O. D.....	.03	@	.03½
No. 2 Mixed.....	.02	@	.02½
Corduroy	—	@	.02
New Canvas.....	.05	@	.05½
New Black Mixed.	.02½	@	.02¾

Domestic Rags (Old)

White No. 1—			
Repacked	2.75	@	3.00
Miscellaneous	2.00	@	2.25
Thirds and Blues—			
Miscellaneous	1.00	@	1.25
Repacked	1.50	@	1.75
Black Stockings (Export)	3.00	@	3.50
Roofing Stock—			
Foreign No. 1.....	.90	@	1.10
Domestic No. 1...	.80	@	.90
Domestic No. 2...	.60	@	.65
Roofing Bagging...	.40	@	.45

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	—	@	1.50
Domestic	1.50	@	1.60
Manila Rope.....	—	@	3.00
Sisal Rope.....	1.50	@	1.75
Mixed Rope.....	.75	@	1.00
Scrap—			
No. 1.....	—	@	1.50
No. 2.....	.80	@	.90
Wool Tares, heavy..	3.25	@	3.50
Mixed Strings.....	.45	@	.50
No. 1 New Light Burlap	2.50	@	3.00
New Burlap Cuttings	1.75	@	2.00

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 2 Hard White	2.25	@	2.30
No. 2 Hard White	1.90	@	2.00
No. 1 Soft White.	1.75	@	1.80
No. 2 Soft White.	1.30	@	1.40
No. 1 Mixed.....	.65	@	.75
Solid Ledger Stock..	1.45	@	1.50
Ledger Stock, white.	1.05	@	1.10
Ledger Stock, colored	.75	@	.80
No. 1 Books, heavy.	.60	@	.75
Manila Cuttings....	1.45	@	1.50
Print Manila.....	.45	@	.50
Container Manila...	.35	@	.40
Kraft Paper.....	.65	@	.70
No. 1 Mixed Paper..	.20	@	.25
Straw Board Chip...	.25	@	.30
Binders Board Chip.	.25	@	.30
Corrugated Board...	.50	@	.55
Overissue News.....	.40	@	.45
Old Newspapers.....	.30	@	.35

BOSTON

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.25	@	2.50
No. 1 Soft White.	1.85	@	2.15
No. 2 Mixed.....	.75	@	.80
Solid Ledger Books..	1.30	@	—
Overissue Ledger Stock	1.30	@	1.50
Mixed Ledgers.....	.85	@	.90
No. 1 Books, heavy..	.65	@	.75
No. 1 Books, light..	.65	@	.75
Crumpled Stitchless Book Stock.....	.55	@	.65
Manila Env. Cuttings	1.70	@	.85
Manila Envelope Cuttings, Extra Quality	2.00	@	2.10
No. 1 Old Manila...	.65	@	.70
White Blank News..	1.30	@	1.40
No. 1 Kraft.....	.65	@	.75
Mixed Papers.....	.15	@	.17½
Print Manila.....	.45	@	.55
Container Manilas..	.27½	@	—
Old Newspapers.....	.27½	@	.32½
Paper Wool Strings..	.60	@	.65
Overissue News.....	.45	@	.50
Box Board Chips....	.20	@	.25
Corrugated Boxes....	.30	@	.32½
Kraft corrugated boxes	.60	@	.65
Screening Wrappers.	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	[illegible]	@	2.65
Domestic	2.65	@	2.75
Sisal Rope	1.75	@	1.85
Mixed Rope	.45	@	.50
Transmission Rope....	1.90	@	2.00
Soft Jute Rope	2.00	@	2.25
Jute Carpet Threads.	.75	@	.90
Gunny Bagging—			
Foreign	1.50	@	1.65
Domestic	1.40	@	1.50
Bleachery Burlap....	2.50	@	2.70
Gunny Bagging.....	1.45	@	1.60
Scrap Burlap—			
Foreign	1.35	@	1.40
Domestic	1.25	@	1.40
Scrap Sisal.....	1.55	@	1.60
Scrap Sisal for Shredding	1.75	@	1.80
Wool Tares, Heavy..	1.40	@	1.50
New Burlap Cuttings	2.25	@	2.40
Aust. Wool Pouches.	1.75	@	2.00
Heavy Baling Bagging	1.50	@	1.60
Paper Mill Bagging..	.85	@	1.00
No. 2 Bagging.....	.45	@	.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints...	.03¼	@	.03½
New White No. 1....	.0675	@	.0690
New Light Flannelettes	.05	@	—
Silesias No. 1.....	.04	@	.04¼
New Black Silesias..	.03½	@	.03¾
Soft Unbleached.....	6.50	@	7.00
Blue Cheviots	.05	@	.05¼
Fancy	.02	@	.02½
Washable	.02	@	.02½
Cottons—According to grades—			
Blue Overalls.....	.04¼	@	.03
New Black, soft...	.03¾	@	.04
Khaki Cuttings.....	.02½	@	.03
O. D. Khaki.....	.03	@	.03¼
Corduroy	.02¾	@	.03
New Canvas.....	.06¾	@	.07¼
B. V. D. Cuttings...	.06¾	@	.07

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04¼	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous ...	2.00	@	2.25
Twos and Blues.....	1.75	@	2.00
Old Blue Overalls...	1.50	@	—
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings.....	3.90	@	4.00
Roofing Stock—			
No. 1.....	1.00	@	1.10
No. 2.....	.75	@	.85
No. 3.....	.65	@	.70

Foreign Rags

(F. o. b. Boston)

Dark Cottons.....	.90	@	1.05
Dutch Blues.....	2.65	@	2.75
New Checks and Blues	2.85	@	3.00
Old Fustians.....	2.25	@	2.50
Old Linsey Garments.	2.10	@	2.25
New Silesias.....	3.75	@	4.00

CHICAGO

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings..	1.80	@	1.90
No. 1 Hard White.	1.70	@	1.80
No. 1 Soft White	1.50	@	—
Ledger & Writings	.75	@	.80
Solid Books.....	.45	@	.50
Blanks	.90	@	—
Krafts	.45	@	.50
New Kraft Cuts.....	1.10	@	—
Manila Env. Cuts...	Nominal		
Ex. No. 1 Manila...	Nominal		
Print Manila	Nominal		
Overissue News.....	.35	@	—
Old Newspapers—			
No. 1 Folded News	.25	@	.30
No. 1 Mixed Paper	.15	@	.20
Roofing Stocks—			
No. 1.....	1.00	@	1.05
No. 2.....	.85	@	—

TORONTO

Paper

Bonds

Direct mill shipment in two-ton lots

No. 1 White $35.50		@	—
No. 1 Tints	36.50	@	—
No. 2 White	25.50	@	—
No. 2 Tints	26.50	@	—
No. 2 Golden Rod..	27.50	@	—
No. 3 White	21.00	@	—
No. 4 White	15.00	@	—
No. 4 Tints	16.00	@	—
No. 4 Golden Rod...	17.00	@	—
Direct mill shipment in three-ton lots			
No. 5 White $10.50		@	—
No. 5 Tints	11.50	@	—
No. 5 Golden Rod..	12.00	@	—
No. 6 White	9.00	@	—
No. 6 Tints	9.50	@	—
No. 6 Golden Rod..	11.00	@	—
No. 7 White	8.00	@	—
No. 7 Tints	8.50	@	—
No. 7 Golden Rod..	10.00	@	—
Book—			
No. 1 M. F.	$7.00	@	—
No. 2 M. F.	6.50	@	—
No. 3 M. F.	5.35	@	—
No. 1 S. C.	7.25	@	—
No. 2 S. C.	6.75	@	—
No. 3 S. C.	5.85	@	—

Coated Book & Litho

Ton Lots (resale)

No. 1 .....$12.00		@	—
No. 2	10.25	@	—
No. 3	8.90	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown.....	4.85	@	5.25
White Wrap.....	4.00	@	—
"B" Manila.....	4.90	@	6.15
No. 1 Manila.....	5.50	@	6.90
Fiber	5.50	@	6.90
Kraft No. 2.. ...	5.50	@	6.90

(F. o. b. Cars, Toronto)

News per ton—			
Rolls (contract)..)46.00		@	—
Sheets 54.00		@	—

Pulp

Ground wood.....$29.00		@	—
Unbleached sulphite.	44.00	@	—
Bleached sulphite...	54.00	@	—
Kraft	50.00	@	—
Soda	54.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut...	2.00	@	—
Soft White.....	1.75	@	—
White Blk. News..	1.25	@	1.10
Book and Ledger—			
Flat Magazine and Book Stock (old)	.70	@	—
Light and Crumpled Book Stock.	.60	@	—
Ledgers and Writings	1.00	@	—
Manilas—			
New Manila Cut...	1.35	@	—
Printed Manilas...	.45	@	—
Kraft	.95	@	—
News and Scrap—			
Strictly Overissue..	.50	@	—
Strictly Folded....	.45	@	—
No. 1 Mixed Paper..	.30	@	—

Domestic Rags

(Price to Mills, f.o.b. Toronto)

No. 1 White Shirt Cuttings	.06½	@	.06¾
Light Prints.....	.03	@	.03¼

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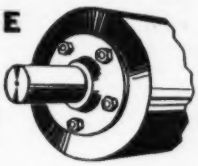

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RUBBER ROLLS

AMERICAN WRINGER CO., Inc.

WOONSOCKET, R. I.

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WANTED—PERSONNEL MANAGER for southern mill. State qualifications and salary expected. Address Box 39-280, care Paper Trade Journal. J-29

MAN TO TAKE CHARGE and operate 48" chip and specialties mill. Capacity ten tons. To operate and produce tonnage at low cost. Central Pennsylvania. Address Box 39-291, care Paper Trade Journal. J-6

WANTED—Working Wax Paper Foreman. Must have good experience. Address Box 39-309, care Paper Trade Journal. J-29

SITUATIONS WANTED

CARDBOARD-CONVERTING EXECUTIVE—Employed, wants new connection. Broad experience in manufacturing wide variety of boards. Knowledge of allied lines. Opportunity essential, location secondary. Address Box 39-160, care Paper Trade Journal. J-29

BOARD MILL SUPERINTENDENT wants position. I am an expert on calender and beater colors. Can make all grades of Boxboards from chip to patent coated. Also understand the power plant maintenance and increase production at the lowest cost. Address Box 39-261, care Paper Trade Journal. A-10

EXECUTIVE—General Manager, Assistant Treasurer, desires change. Broad experience as Comptroller, reducing costs and increasing production. Desires position as Assistant Manager or assistant to busy executive; subordinate position with progressive company considered. Initial salary secondary. 13 years' paper mill experience. Location immaterial. Excellent references from past employers. Address Box 39-267, care Paper Trade Journal. J-13

KRAFT PULP TOUR FOREMAN SPARE OPERATOR OR CHEMIST TEN YEARS IN HIGH TONNAGE LOW COST MILLS, Address Box 39-283, care Paper Trade Journal. J-29

MACHINE TENDER, Millwright, Mechanic, age 39. 20 years' experience Construction, Installation, Operating and maintenance of Cylinder and Fourdrinier machines, making Board, Kraft Bag and Wrapper, Tissues, Straw and Felt. My record will show that I am able to act in any or all of these capacities. References. Address Box 39-281, care Paper Trade Journal. J-29

TOUR BOSS, MACHINE TENDER or BEATERMAN, seeks position. References. Address Box 39-311, care Paper Trade Journal. J-13

COATED PAPER—Man with long experience Calendering, Glazing, Embossing, Slitting, Cutting, etc. Good references. Address Box 39-301, care Paper Trade Journal. J-13

SUPERINTENDENT—Now employed, desires change. Experienced on light specialties, all grades Tissues and various specialties. Colors. Antitarnish Wrappings. Address Box 39-303, care Paper Trade Journal. J-27

CHEMIST—33. Single. Excellent health. Desires position connected with technical side of paper manufacture. Seven years in charge of laboratory, dealing with analysis of paper and cloth; research on paper manufacturing problems. Firm now liquidating. Available immediately, location immaterial. Address Box 39-308, care Paper Trade Journal. J-29

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FOR SALE OR LEASE—Wet Machine Mill—Can be made suitable for Binders Board, Fibre Board or Press Board—Boston vicinity. Address Box 39-244, care Paper Trade Journal. tf

FOR SALE—Two 72" Type 10, Model 5, High Speed Camachine Slitters and Rewinders, equipped with water cooled frictions. Address Box 39-282, care Paper Trade Journal. J-6

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Machinery in Plant of
ORONO PULP & PAPER CO.
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Consisting Principally of

1—Fourdrinier Paper Machine with 25" suction couch, 18" suction press, second press, smoothing press, and 26 dryers 48" x 107" Calender, Reel and Marshall Drive.
1—Fourdrinier Paper Machine same except dryers 102" face.
1—Fourdrinier Tissue Machine with pick up attachment, one press, 13 Dryers 48" x 101". Calender, Reel, Winder and Drive.
14—Beaters, 50" x 50"
4—Emerson Jordans, large size
1—Voith Pulper (with friction bearings)
1—62" Cameron
1—100" Dilion Duplex with Brannon folder
1—48" Acme Cutter
1—Parrell Roll Grinder with crowning attachment to grind up to 24" x 120"
Sulphite Pulp Mill equipment for 60 ton capacity consisting of saw, barkers, chippers, Waterville Chip Screens. Sulphur Burner 36" x 12', Jenssen gas cooler. Barker acid tower. Digesters.
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10—10-plate screens
4—Impco Centrifugal Screens
2—No. 2 Impco Knotters
2—Impco Wet Machines

Address Box 39-289 care Paper Trade Journal.—J22tf

I HAVE a full automatic machine designed for making square or round two piece cups. The square is more rigid than the round one and takes up less space. Any information gladly given. Address Box 39-287, care Paper Trade Journal. J-13

FOR SALE—One Allis-Chalmers Induction Motor 150 H.P., 440 Volts, 3 phase, 60 cycle. One 2000# Niagara Beater, roll 60" wide, 66" diameter, also pulley and belt. One Oliver Filter—reconditioned size 8' x 14". For further particulars write the Prairie State Paper Mills, Joliet, Illinois. Jltf

FOR SALE—Complete Fourdrinier Paper Machine. Bird Screen; wire 124" x 60'; 22 dryers 48" x 120"; two calender stacks; double drum winder; drive; variable speed engine, jordans, pumps, etc. A-1 condition. Address Box 39-300, care Paper Trade Journal. J-29

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HOWLAND, MAINE
Plant & Equipment For Sale

75 ton Sulphate Mill.
1 100 inch Trim Fourdrinier Paper Machine ran 600 feet with Beaters and Jordans.
4 story complete Bag Plant with machines.
Steam and Electricity.
Excellent Buildings concrete and brick.
150,000 square feet floor space.
Building and foundation for 160 inch Paper Machine.

For Particulars Write
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175 Richdale Avenue, Cambridge, Massachusetts
J-22tf

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to advertisements appearing under Box Numbers in care of

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New York, N. Y.

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1—56" Kidder Press Winder—20 slitters
1—36" Hobbs Winder—25 slitters
1—42" Gumming Machine—Knowlton
1—50" Oswego Trimmer
1—12-plate Improved flat screen
1—42" Camachine—13 slitters
1—48" x 48" Downingtown Thickner
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4—1,250 lb. Iron Tub Beaters—lava rolls
Complete 30-ton Sulphate Mill

All of the above is in first-class condition and is either located in our warehouse or within a distance of 30 miles.

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We Buy and Sell from Single Items to Complete Plants
tf

FOR SALE—One 74" and one 60" Cameron Slitter and one 88" Langston. Address Box 39-295, care Paper Trade Journal. J-13

FOR SALE—1—Single motor drive, 250 volts, D.C., 100 H.P., variable voltage, 300 to 900 R.P.M. motor complete with controls. Synchronous motor (440 volts) generator set. Installed in 1932. Details and list of other motors and equipment sent on request. Address Box 39-306, care Paper Trade Journal. J-29

FOR SALE—Good used 60" Cameron and 50" Langston Slitters and Rewinders. For further particulars address Box 39-302, care Paper Trade Journal. J-29

FOR SALE—40" New Model Cutter, rebuilt and fully guaranteed. Address Box 39-310, care Paper Trade Journal. J-29

FOR SALE—Two cylinder moulds 36" x 92", complete with vats and Timken roller bearings. One similar spare mould, good condition. Address Box 39-298, care Paper Trade Journal. J-29

FOR SALE—In the East, two machine tissue Paper Mill; 81" trim. Reasonable price. Address Box 39-299, care Paper Trade Journal. J-29

FOR SALE—High production bag machines. See these operating, as well as, modern web printing presses and numerous other converting machines this summer at the POTDEVIN Display Hall. POTDEVIN Machine Co., 1233A—38th Street, Brooklyn, N. Y. J-29

WANTED

WANTED—2 Brightwood Box Machines, Cameron Slitter. Good condition. Address Box 39-223, care Paper Trade Journal. tf

WANTED—One (1) Used Super-Calender Stack, 60 to 70" working face, complete with back and winding stand. In your reply, give full description and price. Address Box 39-269, care Paper Trade Journal. J-29

WANTED—Schopper Freeness Tester. Address Box 39-294, care Paper Trade Journal. J-29

WANTED—A used Consistency Regulator. What have you? Ohio Paper Co., 5302 W. 66th Street, Chicago, Ill. J-29

WANTED—One used Langston Spiral Paper Tube Machine with approximate maximum range 2" diameter. Address Box 39-307, care Paper Trade Journal. J-6

WANTED—Napkin Machine capable of making quarterfold 13½ x 13½ Embossed Napkins. Must be in perfect condition. State all particulars in letter. Address Box 39-304, care Paper Trade Journal. J-29

WANTED—A source of supply capable of shipping 20 tons of Jumbo Rolls $2 Toilet Tissue each week. Address Box 39-305, care Paper Trade Journal. J-29

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SHOCK ABSORBER RINGS TO CUSHION TABLE ROLLS IN ALL DIRECTIONS NO MORE HAMMERED OUT BEARINGS
NO SPECIAL TOOLS REQUIRED TO RE-LOCATE ROLLS
SLOT TO ENGAGE KEY
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BOTTOM VIEW

This new rubber collar for table and felt rolls developed by Black-Clawson is efficient because it is simple.

The drawings describe it . . . a rubber collar to absorb the jar and protect the bearing as the shake throws the roll against the side rail. This collar will extend bearing life at least ten fold . . . costs but a few cents apiece . . . can be slipped on in a minute's time . . . and should last indefinitely.

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Also compensates for any misalignment due to a sprung felt roll.

This rubber collar is a simple but important development that you should consider when replacing any table or felt roll. Write today for full particulars. The Black-Clawson Co., Hamilton, Ohio. Owners of Shartle Brothers.

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COMPLETE LABORATORY EQUIPMENT

Consisting of one gas fired boiler—digester 4' x 5'—blow pit and drainer—stuff chest—sheet forming machine—dryer—calenders—moisture content machine—all motor driven. This can be installed in a very small space in any laboratory.

FRANK P. LYDEN,
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J-29

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1—625 KVA A1. Chalmers turbo generator, low pressure, 16# abs. or 150# ga., 480 or 240 volts, 3600 RPM, condensing. Good condition. Price $1,000.

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Shartle Brothers Machine Co.
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Columbia Alkali Corp.
Electro Bleaching Corp.
Paper Makers Chemical Division, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
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CEMENT (Acid Proof)
Pennsylvania Salt Mfg. Co.
Stebbins Engrg. & Mfg. Co

CENTRIFUGAL MACHINERY
Bird Machine Co.
De Laval Steam Turbine Co.
Shartle Brothers Machine Co.
Singer, J. E.

CHAIN DRIVES
Chain Belt Company
Link-Belt Co.

CHEMICAL FEED EQUIPMENT
Leeds & Northrup Company
Wallace & Tiernan Co., Inc.

CHEMICALS
Amer. Cyanamid & Chem. Corp.
Chemical & Pigment Co.
The Columbia Alkali Corp.
E. I. du Pont de Nemours & Co., Inc.
Electro Bleaching Gas Co.
General Dyestuff Corp.
Geigy Co., Inc.
N. Y. Color & Chemical Co.
Paper Makers Chemical Division, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Reichhold Chemicals, Inc.
Solvay Sales Corp.
Williams & Co., C. K.

CHIPPERS
Appleton Machine Co.
D. J. Murray Mfg. Co.
Valley Iron Works Co.

CHLORINE
American Cyanamid & Chemical Corp.
Columbia Alkali Corp.
Electric Bleaching Gas Co.
Pennsylvania Salt Mfg. Co.
Solvay Sales Corp.

CHLORINE CONTROL APPARATUS
Wallace & Tiernan Co., Inc.

CHROME PLATE
Chromium Corp. of America

CHUCKS
John Waldron Corp.

CLAY
Amer. Cyanamid & Chem. Corp.
English China Clays Sales Corp.
International Pulp Co.
Paper Makers Importing Co.
Vanderbilt Co., R. T.

CLEANING MATERIALS
Amer. Cyanamid & Chem. Corp.
Bird Machine Co.
Paper Makers Chemical Division, Hercules Powder Co.
Pennsylvania Salt Mfg. Co.
Philadelphia Quartz Co.
Solvay Sales Corp.

CLUTCHES
Appleton Machine Co.
Bagley & Sewall Mfg. Co.
Beloit Iron Works
Black-Clawson Company
Chain Belt Company
Farrel-Birmingham Co.
Link-Belt Co.
The Sandy Hill Iron & Brass Works
Rodney Hunt Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.

CO_2 RECORDERS
Leeds & Northrup Company

COAL & ASH HANDLING MACHINERY
Chain Belt Company
Link-Belt Co.

COATING MACHINERY
Cameron Machine Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co
Waldron Corporation, John
Weber, Herman G.

COATING MATERIALS
American Cyanamid & Chemical Corp.
Paper Makers Chemical Division, Hercules Powder Co
Reichhold Chemicals, Inc
Stebbins Engrg. & Mfg. Co

COCKS, Lubricated
Crane Co.

COGS
Bowsher, N. P., The

COLORIMETERS
Bausch & Lomb Optical Co.

WHERE TO BUY

Testing Machines, Inc.

COLOR ANALYZERS
General Electric Co.
Testing Machines, Inc.

COLOR MIXING EQUIPMENT
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Waldron, John, Corp.

COLORS & PIGMENTS
Reichhold Chemicals, Inc.

COMBINING MACHINE
Shartle Brothers Machine Co.
Waldron, John, Corp.

COMBUSTION CONTROL SYSTEMS
Leeds & Northrup Company

COMPENSATORS
General Electric Company

COMPRESSORS
Delaval Steam Turbine Co.
Nash Engineering Co.

CONDENSER TUBES
Chase Brass & Copper Co.
H. M. Hillman

CONDUCTIVITY RECORDERS
Leeds & Northrup Company

CONSULTING ENGINEERS
Ferguson Co., Hardy S.
Hardy, George F.
Johnson & Wierk, Inc.

CONTRACTORS
Merritt-Chapman & Scott Corp.

CONTROLLERS, Moisture Content
The Foxboro Company
Perfecting Service Corp.
Taylor Instrument Companies

CONTROLLING INSTRUMENTS
Bristol Co., The
Foxboro Company
General Electric Co.
Leeds & Northrup Company
Taylor Instrument Companies
Testing Machines, Inc.

CONVEYOR BELTS
Chain Belt Company
Link Belt Co.

CONVEYORS (Broke)
Black-Clawson Company

CONVEYER CHAINS
Chain Belt Company
Link-Belt Co.

CONVEYORS
Chain Belt Company
Link-Belt Co.
Murray, D. J. Mfg. Co.
Ross Engineering Corp., J. O.

COOKING APPARATUS
E. D. Jones & Sons Co.

COOKING AND RECOVERY PROCESS
Chemipulp Process, Inc.
Murray Mfg. Co., D. J.
Ross Engineering Corp., J. O.

COOLERS
Ross, J. O. Mfg. Co.

COPPER TUBES
Chase Brass & Copper Co.
H. M. Hillman

CORES (Paper)
Hinman Paper Co.
Senoco Products Co.

CORES (Steel)
Rodney Hunt Machine Co.
Smith & Winchester Mfg. Co

COUCH ROLLS
American Wringer Co.
Appleton Machine Co.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
Moore & White Co., The
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Montague Machine Co.
D. J. Murray Mfg. Co.
Stowe-Woodward, Inc.
Valley Iron Works

COUPLINGS
Bagley & Sewall Mfg. Co.
Beloit Iron Works
Black-Clawson Company
Chain Belt Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co., Inc.
The Frederick Iron & Steel
E. D. Jones & Sons Co.
Link Belt Co.
Moore & White Co.
The Noble & Wood Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stebbins Engrg. & Mfg. Co.
Waldron Corp., John

CRANES
Harnishfeger Corp.
Speeder Machinery Corp.

CREPING MACHINES
Beloit Iron Works
The Cannard Company
Hudson Sharp Machine Co.
Paper Converting Machine
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
John Waldron Corp.

CUTTERS
Beloit Iron Works
Black-Clawson Company
Cameron Machine Co.
Davis, Frank H., Co.
Downingtown Mfg. Co.
Hamblet Machine Co.
Harris-Seybold-Potter Co.
Hudson Sharp Mch. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

CYLINDER MACHINES
Beloit Iron Works
Black-Clawson Company
Davis, Frank H., Co.
Downingtown Mfg. Co.
Improved Paper Mchry. Co.
Moore & White Co.
Pusey & Jones Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works

CYLINDER WIRES
Appleton Wire Works
International Nickel Co.
International Wire Works
Lindsay Wire Weaving Co.

DAMPENERS
Perkins & Son, Inc., B. F.
Valley Iron Works

DAMPER REGULATIONS
The Foxboro Company

DECKERS
Appleton Machine Co.
Bird Machine Company
Improved Paper Mchy. Corp.
Montague Machine Co.
Moore & White Co.
D. J. Murray Mfg. Co.
Oliver United Filters, Inc.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works

DECKLE STRAPS
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.

DEFOAMERS
American Cyanamid & Chemical Corp.
Heller & Merz
National Oil Products Co.

DIE CUTTERS
Appleton Machine Co., The

DIE PRESSES
Harris-Seybold-Potter Co.

DIGESTERS
Pusey & Jones Corp.
Stebbins Engrg. & Mfg. Co.

DIGESTER CONTROLS
The Foxboro Company
Taylor Instrument Companies

DIGESTER FITTINGS
Murray, D. J., Mfg. Co.

DOCK CONSTRUCTION
Merritt-Chapman & Scott Corp.

DOCTORS
Beloit Iron Works
Bird Machine Company
Black-Clawson Company
Downingtown Mfg. Co.
Lobdell Carwheel Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Valley Iron Works

DOCTOR BLADES
Continental Diamond Fibre Co.
Improved Paper Mchy. Corp.
International Nickel Co.
The Manhattan Rubber Mfg. Division of Raybestos-Manhattan, Inc.
The Sandy Hill Iron & Brass Works
Stowe-Woodward, Inc.

DOCTOR BLADES (Bronze Fer)
Black-Clawson Company
The Sandy Hill Iron & Brass Works
Shartle Machine Co

DRAINAGE SYSTEMS
Crane Company
Stickle Steam Specialties Co

DRAGLINES
Speeder Machinery Corp.

DREDGING
Merritt-Chapman & Scott Corp.

DRIERS
Beloit Iron Works
Black-Clawson Company
Davis, Frank H., Co.
Link Belt Co.
Ross, J. O. Engineering Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Waldron, John, Corp.

DRIVES
General Electric Company
The Sandy Hill Iron & Brass Works

DRIVES & DRIVE STANDS
Beloit Iron Works
Bird Machine Co.
Black-Clawson Company
Chain Belt Company
Davis, Frank H., Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Link-Belt Co.
Moore & White Co.
Murray, D. J. Mfg. Co.
The Noble & Wood Machine Co.
Pusey Jones Corp.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Valley Iron Works

DRYER FELTS
Asten-Hill Mfg. Co.
Mt. Vernon-Woodbury Mills, Inc.
Turner Halsey & Co.
Shuler & Benninghofen

DRYING SYSTEMS
Murray Mfg. Co., D. J.
Ross Engineering Corp., J. O
Stickle Steam Specialties
Waldron Corporation, The

DUAL PRESS (Horizontal)
Beloit Iron Works

DUSTERS
Appleton Machine Co.
Downingtown Mfg. Co.
E. D. Jones & Sons Co.
Moore & White Co.
The Noble & Wood Machine Co.
Norwood Eng. Co.
D. J. Murray Mfg. Co.

DYESTUFFS & COLORS
Ciba Company
E. I. du Pont de Nemours & Co.
Geigy Co., The
General Dyestuff Corp.
Heller & Merz
National Aniline & Chemical
N. Y. Color & Chemical Co.
Paper Makers Chemical Division, Hercules Powder Co.
Reichhold Chemicals, Inc.
C. K. Williams & Co.

ELECTRIC EQUIPMENT
General Electric Co.

ELEVATORS (Portable)
Link Belt Company

EMBOSSING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co.
The Textile-Finishing Mchy. Co.
John Waldron Corp.

EMBOSSING ROLLS
The Appleton Machine Co.
Hudson Sharp Machine Co.
B. F. Perkins & Son, Inc.
Roehlen Engraving Works Inc.
The Textile-Finishing Mchy. Co.
Waldron Corporation, John

EMULSIONS, RESIN
Reichhold Chemicals, Inc.

ENGINEERS
Ferguson, Hardy S.
Hardy, George F.
Johnson & Wierk, Inc.
O'Donaghue, Roderick
Stone & Webster Engrg. Corp.

ENGINEERING CONSTRUCTION
Merritt-Chapman & Scott Corp.
Stone & Webster Eng. Corp.

EVAPORATORS
Murray, D. J., Mfg. Co.

EXCAVATORS
Speeder Machinery Corp.

EXTRACTORS
Bird Machine Company
Downingtown Manufacturing
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Valley Iron Works Co.

FANS
General Electric Co.
B. F. Perkins & Son, Inc.
Ross Engineering Co., J. O

FAN CONTROLS (Ventilating
The Bristol Company
The Foxboro Company
Taylor Instrument Companies

FELT CARRIER ROLLS
American Wringer Co.
Appleton Machine Co.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Stowe-Woodward, Inc.
Valley Iron Works

FELT CLEANERS
National Oil Products Co.
Philadelphia Quartz Co.

FELT CONDITIONERS
Bird Machine Company
The Noble & Wood Machine Co.

FELTS
Appleton Woolen Mills
Asten-Hill Mfg. Co.
Bulkley Dunton Pulp Co., Inc
Draper Bros. Co.
Huyck & Son, F. C.
Knox Woolen Co.
Lockport Felt Co.
Mt. Vernon-Woodberry Mills Inc.
Orr Felt & Blanket Co.
Shuler & Benninghofen
Turner Halsey & Co.
Waterbury Felt Co.
H. Waterbury & Sons Co.

FELT GUIDES
Beloit Iron Works
Moore & White Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
John Waldron Corp.

FELT TIGHTENER (Automatic)
John Waldron Corp.

FERRULES
Chase Brass & Copper Co.
H. M. Hillman

FILTERS
Improved Paper Mchy. Corp
Moore & White Co.
Oliver United Filters, Inc.
J. O. Ross Engrg. Corp.

FILTER WIRES
International Nickel Co.

FITTINGS, Pipe (Plain end or Screwed)
Crane Co.

FLEXIBLE COUPLINGS
Beloit Iron Works
Black-Clawson Company
Chain Belt Company
De Laval Steam Turbine Co
Farrel Birmingham Co.
The Frederick Iron & Steel Co.
Link-Belt Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co
John Waldron Corp.
Westinghouse Electric & Mfg Co.

FLEXIBLE SLICE
E. D. Jones & Sons Co
The Sandy Hill Iron & Brass Works

FLOORING
Hendrick Mfg. Co.
Norton Co.

FLOW METERS
Bristol Co., The
The Foxboro Company
Leeds & Northrup Company
Taylor Instrument Companies

FLY BARS
Black-Clawson Company
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Jones & Sons Co., E. D.
Noble & Wood Machine Co
Shartle Brothers Machine Co

FOLDING MACHINES
Hamblet Machine Co.
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
Waldron, John, Corp.

FORMING MACHINES
Downingtown Mfg. Co
The Noble & Wood Machine Co.

WHERE TO BUY

The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

FOURDRINIER MACHINES
Bagley & Sewall Mfg. Co.
Beloit Iron Works
Black-Clawson Company
Consolidated Products Co. Inc.
Davis, Frank H., Co.
Downingtown Mfg. Co.
Moore & White Co.
Pusey & Jones
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Smith & Winchester

FOURDRINIER WIRES
Appleton Wire Works
International Wire Works
Lindsay Wire Weaving Co.

FREENESS RECORDERS
Trimbey Machine Works

FREENESS TESTERS
Testing Machines, Inc.

FREQUENCY RECORDERS
The Bristol Company
Leeds & Northrup Company
Taylor Instrument Companies

FRICTION CALENDERS
The Textile-Finishing Mchy. Co.

FURNACE PRESSURE (Draft Control)
The Bristol Company
The Foxboro Company
Leeds & Northrup Company

GALVANOMETERS
Foxboro Company
General Electric Co.
Leeds & Northrup Company

GAS ANALYSIS EQUIPMENT SO2 and CO2 RECORDERS
Leeds & Northrup Company

GATES (Canal)
Rodney Hunt Machine Co.

GATES (Sluice)
Rodney Hunt Machine Co.

GEARS
Beloit Iron Works
Black-Clawson Company
De Laval Steam Turbine Co.
Downingtown Mfg. Co.
Farrel-Birmingham Co.
Improved Paper Mchy. Corp
E. D. Jones & Sons Co.
Link-Belt Co.
Moore & White Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works
John Waldron Corp.

GENERATORS
De Laval Steam Turbine Co.
General Electric Co.

GENERAL CONTRACTORS
Merritt-Chapman & Scott Corp.
Stone & Webster, Inc.

GLYCERINE
Reichhold Chemicals, Inc.

GRABS & GRAPPLES
Link Belt Company

GRANITE ROLLS
Beloit Iron Works
Black-Clawson Company
The Noble & Wood Machine Co.
Downingtown Mfg. Co.
Perkins & Son, Inc., B. F.

GRINDERS
Cevel-Hanchett Co.
Harris-Seybold-Potter Co.

GRINDERS (Wood Pulp)
The Sandy Hill Iron & Brass Works

GRATING (Sidewalk)
Hendrick Mfg. Co.
Norton Co.
The Manhattan Rubber Mfg Division of Raybestos-Manhattan, Inc.

HAMMERS (Soft Faced)
Greene, Tweed & Co.

HAND CLEANERS
Magnus Chemical Co.

HANGERS
Chain Belt Company
Crane Co.
Link Belt Co.

HEATING AND VENTILATING SYSTEMS
Crane Co.
General Electric Co.
Grinnell Company
D. J. Murray Mfg. Co.
Perfecting Service Corp.
Ross Engineering Corp., J. O. J. E. Singer
Stickle Steam Specialties Co.

HEAT-TREATING FURNACES
Leeds & Northrup Company

HIGH DENSITY THICKENERS
Shartle Brothers Machine Co.

HOISTS
Appleton Machine Co.
Harnishfeger Corp.
Rodney Hunt Machine Co.
E. D. Jones & Sons Co.
Link Belt Co.

HOSE (Air, Water, Suction, etc.)
Goodyear Tire & Rubber Co.
Manhattan Rubber Mfg. Co.

HUMIDITY RECORDERS
The Bristol Company
The Foxboro Company
Leeds & Northrup Company
Taylor Instrument Companies

HYDRAULIC MACHINERY
Farrel-Birmingham Co.

INDICATORS
The Bristol Co.
The Foxboro Company
Cambridge Instrument Co.
General Electric Co.
Grinnell Company
Leeds & Northrup Company
Taylor Instrument Companies

INTERFOLDING MACHINES
Hudson Sharp Machine Co.
Paper Converting Machine Co.
John Waldron Corp.

INSTRUMENTS
Bowsher, N. P.
The Bristol Co.
The Foxboro Company
General Electric Co.
Leeds & Northrup Company
Taylor Instrument Companies
Testing Machines, Inc.

JORDANS
The Appleton Machine Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

JORDAN FILLINGS
Appleton Machine Co.
Davis, Frank H., Co.
International Nickel Co.
E. D. Jones & Sons Co.
Noble & Wood Machine Co.
Shartle Brothers Machine Co.
Smith & Winchester Mfg. Co.
Valley Iron Works

K MONEL
International Nickel Co.

KNIVES
Beloit Iron Works
Dilts Machine Works, Inc.
Hamblet Machine Co.
Harris-Seybold-Potter Co.
E. D. Jones & Sons Co.
Valley Iron Works

LABELLING MACHINES
Potdevin Machine Co.

LABORATORY EQUIPMENT
Appleton Machine Co.
Dilts Machine Works
E. D. Jones & Sons Co.
Leeds & Northrup Company
Perfecting Service Corp.
Mine & Smelter Supply Co.
Noble & Wood Machine Co
Taylor Instrument Companies
Testing Machines, Inc.
Valley Iron Works

LATHES
Montague Machine Co.

LAY BOYS
Hamblet Machine Co.
Moore & White Co.

LEVELERS
National Oil Products Co.

LIGHTING EQUIPMENT (Electric)
General Electric Company

LIQUID LEVEL RECORDERS
The Foxboro Company
Leeds & Northrup Company
Taylor Instrument Companies

LITHOPONE
Chemical & Pigment Co.
New Jersey Zinc Co.

LOAD (Electrical) Control
Leeds & Northrup Company

LOFT DRYERS
Ross Engineering Corp., J. O
Perfecting Service Corp.
Valley Iron Works
John Waldron Corp.

LUBRICANTS
Atlantic Refining Co.
Gulf Refining Co.
Shell Union Oil Co.
Socony-Vacuum Oil Co., Inc.
Tide Water Associated Oil Co.

MACHINERY ERECTION
Merritt-Chapman & Scott Corp.

MAGNIFIERS (Pocket)
Bausch & Lomb Optical Co.

MARKING BANDS (Rubber)
Stowe-Woodward, Inc.

MEASURING INSTRUMENTS
The Bristol Company
The Foxboro Company
Leeds & Northrup Company
Taylor Instrument Companies

METERS
The Bristol Co.
The Foxboro Company
Leeds & Northrup Company
Taylor Instrument Companies

METERING & PROPORTIONING SYSTEMS
The Bristol Company
The Foxboro Company
Merrick Scale Mfg. Co.
Taylor Instrument Companies
Trimbey Machine Works

MICROMETERS
Farrel-Birmingham Co.
Lobdell Car Wheel Co.
Montague Machine Co.
Testing Machines, Inc.

MICRO-PROJECTORS
Bausch & Lomb Optical Co

MICROSCOPES
Bausch & Lomb Optical Co.

MIXERS
Link Belt Company
Waldron Corp., John

MONEL METAL (Covered Rolls)
The International Nickel Co.

MONEL METAL (Rolled Forms)
The International Nickel Co.

MOTORS
General Electric Co.

NAPKIN FOLDING MACHINE
Hudson Sharp Machine Co.
Paper Converting Machine Co., Inc.
Waldron, John, Corp.

NICKEL-CLAD STEEL
The International Nickel Co.

NICKEL IRON ALLOYS
The International Nickel Co.

OPACIFYING PIGMENT
Chemical & Pigment Co.
New Jersey Zinc Co.
Titanium Pigment Co.
United Color & Pigment Co.
R. T. Vanderbilt Co.

PACKING MACHINES
Hudson Sharp Machine Co.

PACKING
The E. F. Goodrich Company
Greene, Tweed & Co.
Manhattan Rubber Co.

PACKING BOXES
Shartle Brothers

PACKING (Specially Treated to Caustic Soda and Alkalies)
Greene, Tweed & Co.

PACKING (Rubber)
The Manhattan Rubber Mfg Division of Raybestos-Manhattan, Inc.

PAPER BAG MACHINERY
H. H. Heinrich, Inc.
Potdevin Machine Co.
Smith & Winchester Mfg. Co
Shartle Brothers Machine Co.
Weber, Herman G.

PAPER CUTTERS
Black-Clawson Company
Davis, Frank H., Co.
Downingtown Mfg. Co.
Hamblet Machine Company
Harris-Seybold-Potter Co.
Moore & White Co.
Shartle Brothers Machine Co
Smith & Winchester Mfg. Co.

PAPER DRILLING MACHINE
Harris-Seybold-Potter Co.

PAPER MACHINE DRIER CONTROL SYSTEMS
The Bristol Company
The Foxboro Company
Perfecting Service Corp.
Taylor Instrument Companies

PAPER MANUFACTURERS
West Virginia Pulp & Paper

PAPER MACHINE HOODS
Ross Engineering Corp., J. O
Perfecting Service Corp.

PAPER MACHINE SLICES
Beloit Iron Works
Black-Clawson Company
E. D. Jones & Sons Co.
Montague Machine Co.
The Sandy Hill Iron & Brass Works
Valley Iron Works Co.

PAPER MILL ENGINEERS
Johnson & Wierk, Inc.
Ferguson, Hardy S.
Hardy, George P.
O'Donaghue, Roderick

PAPER ROLLS
The Textile-Finishing Mchy. Co.
B. F. Perkins & Son, Inc.
Waldron Corp., John

PAPER SCALES
Testing Machines, Inc.

PAPER TESTERS
Perkins & Son, Inc., B. F.
Testing Machines, Inc.
Valley Iron Works

PAPER TUBE MACHINERY
Dietz Machine Works
Langston Co., Samuel M.

PAPER WAXING MACHINERY
Potdevin Machine Co.
Shartle Brothers Machine Co
Waldron Corp., John

PASTING MACHINES
Beloit Iron Works
Black-Clawson Company
Davis, Frank H., Co.
Murray, D. J., Mfg. Co.
Moore & White Co.
Potdevin Machine Co.
Shartle Brothers Machine Co
John Waldron Corp.

PENSTOCKS
Rodney Hunt Machine Co.

PERFORATING MACHINES
Dietz Machine Works
Waldron John, Corp.

PERFORATED METAL
Chase Brass & Copper Co.
Harrington & King Perforating Co.
Hendrick Mfg. Co.
Charles Mundt & Sons

pH TESTERS AND CONTROL
Leeds & Northrup Company
Wallace & Tiernan, Co., Inc.

PILE DRIVERS
Speeder Machinery Corp.

PILLOW BLOCKS
Link Belt Company
Chain Belt Company

PIPE
Chase Brass & Copper Co.
Crane Co.
Grinnell Company
H. M. Hillman
The International Nickel Co.
Mundt & Sons, Charles
J. E. Singer

PLATES (Filter)
J. E. Singer
Stebbins Engrg. & Mfg. Co.

PIPING CONTRACTORS
Merritt-Chapman & Scott Corp.

PLATING, CHROMIUM
Chromium Corp. of America

PLATERS
Perkins & Son, Inc., B. F.

PLAYING CARD MACHINERY
Waldron, John, Corp.

PLUGS
Black-Clawson Company
E. D. Jones & Sons Co.
The Noble & Wood Machine Co.
Shartle Brothers Machine Co.

POTENTIOMETERS
The Foxboro Company
Leeds & Northrup Company

POWER PLANTS
Consolidated Products Co., Inc.
Johnson & Wierk, Inc.
Perfecting Service Corp.

POWER TRANSMISSION EQUIPMENT
Beloit Iron Works
Black-Clawson Company
Chain Belt Company
De Laval Steam Turbine Co.
Farrel-Birmingham Co.
Link-Belt Co.
Moore & White Co.
Murray, D. J.
The Sandy Hill Iron & Brass Works

PRECISION INSTRUMENTS
The Bristol Co.
The Foxboro Company
Leeds & Northrup Company
Taylor Instrument Companies
Testing Machines, Inc.

PRESSES
Black-Clawson Company
Farrel-Birmingham Co.
Paper Converting Machine Co., Inc.

WHERE TO BUY

Potdevin Machine Co.
Shartle Brothers
Valley Iron Works
Waldron Corp., John

PRESSES (Dual Suction)
Beloit Iron Works

PRESS ROLLS
American Wringer Co., Inc.
Beloit Iron Works
Black-Clawson Company
Downingtown Mfg. Co.
The Manhattan Rubber Mfg Division of Raybestos-Manhattan, Inc.
Montague Machine Co.
Perkins & Son, Inc., B. F.
Pusey & Jones Corp.
Rodney Hunt Machine Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers
Stowe-Woodward, Inc.
Valley Iron Works

PRESSURE BULKERS
Perkins & Son, Inc., B. F.

PRINTING PRESSES
H. H. Heinrich, Inc.
Hudson Sharp Machine Co.
Potdevin Machine Co.
Paper Converting Machine Co., Inc.
John Waldron Corp.
Weber, Herman G.

PULLEYS
Beloit Iron Works
Black-Clawson Company
Chain Belt Company
Downingtown Mfg. Co.
Improved Paper Mchy. Corp
E. D. Jones & Sons Co.
Link-Belt Co.
Montague Machine Co.
The Noble & Wood Machine Co.
D. J. Murray Mfg. Co.
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co
Valley Iron Works

PULP BINDERS
Reichhold Chemicals, Inc.

PULPSTONES
Norton Co.

PULPS
Anderson Co., J.
Bulkley Dunton Pulp Co., Inc
Cellulose Sales Co.
Gottesman & Co., Inc.
Lagerloef Trading Co.
Perkins-Goodwin Co.
Price & Pierce, Ltd.
Pulp Sales Corporation
Pulp and Paper Trading Co

PULPERS
Bird Machine Co.
Dilts Machine Works, Inc.
Downingtown Mfg. Co.
Improved Paper Mchy. Co.
E. D. Jones & Sons Co.
D. J. Murray Mfg. Co.
Noble & Wood Machine Co
The Sandy Hill Iron & Brass Works
Shartle Brothers Machine Co

PULP SCREENS
Bird Machine Company
D. J. Murray Mfg. Co.
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